VOLUME XXII NUMBER 23

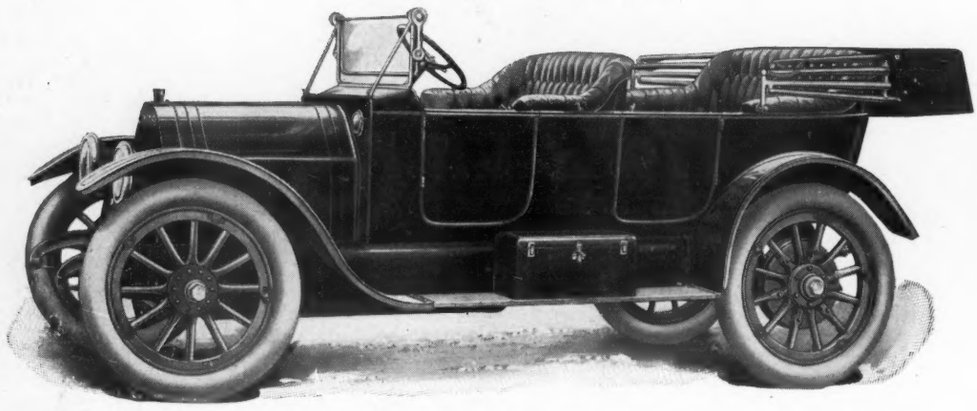
MOTOR AGE

One Thousand Miles through Colorado

Reviewing the Foreigner

December 5, 1912 10 Cents a Copy

Absence of Vibration Is One of the Features in the HAYNES



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MOTOR AGE

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Contents

DEPARTMENTS

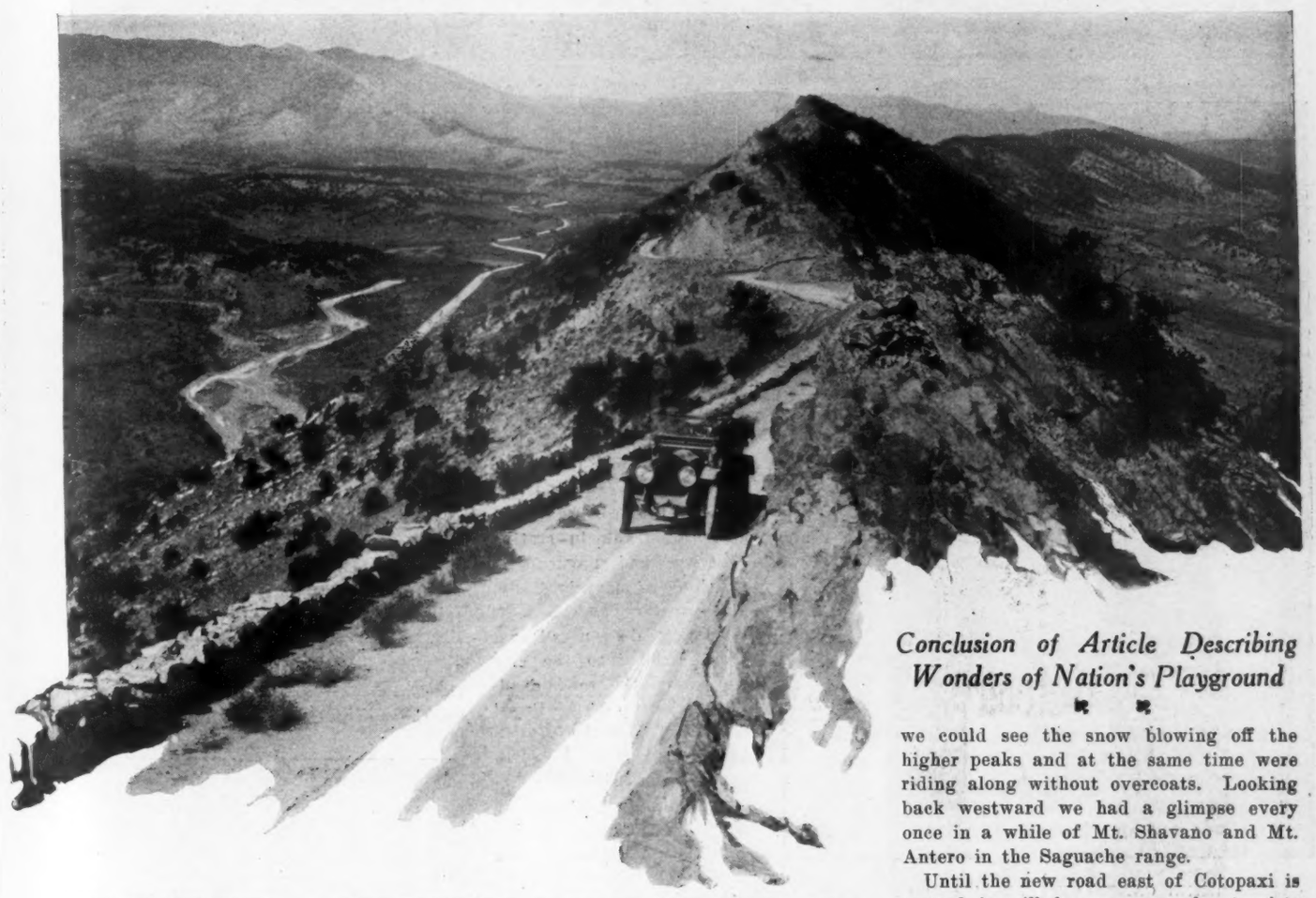
VOL. XXII, No. 23 CHICAGO, DECEMBER 5, 1912 $3.00 PER YEAR

MOTOR AGE

One Thousand Miles Through Colorado

Part 4—The Skyline Drive

By John P. Dods



THE SKYLINE DRIVE. A MOTOR BOULEVARD ON TOP OF A MOUNTAIN RANGE

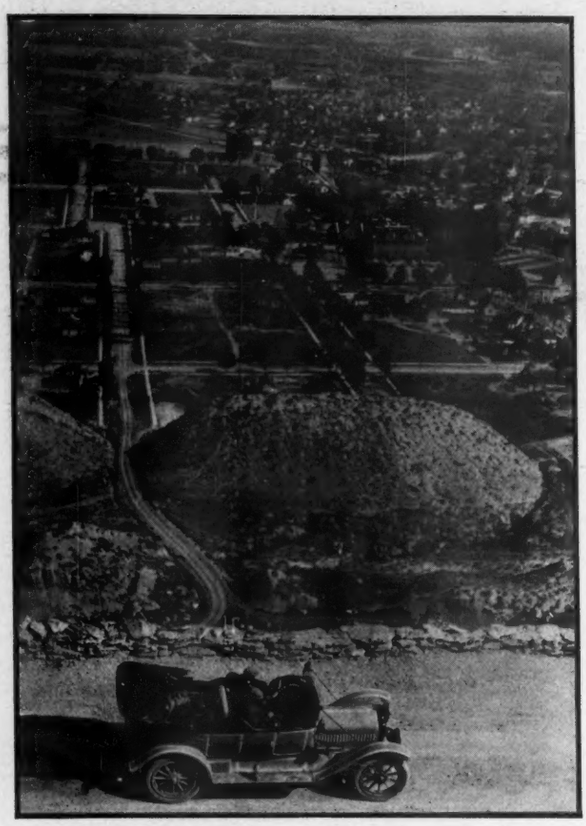
Conclusion of Article Describing Wonders of Nation's Playground

WE started out Thursday morning from Salida with a great deal of enthusiasm for the ride down the Arkansas, as we had been told in no measured words about the road conditions and general beauty of the ride. We were in no way disappointed; in fact, the first 25 miles to Cotopaxi was one of the most beautiful in Colorado, although not a thriller like some pieces of the road we had been over along the edge of the cliffs or deep into canyons. Just as soon as the new road between Cotopaxi and Parkdale is finished it will be complete all the way between Salida and Canon City.

This first 25 miles is a well improved road of decomposed granite all the way, wide enough to pass at any time and quite close to the river for the whole distance. The valley is broad enough so that there is considerable farming. Add to this the wonderful snow caps of the Sangre de Cristo range in the south which seem to come right down almost to the river and you can imagine, perhaps, what an ideal trip it is. These snow caps were so close we could see the snow blowing off the higher peaks and at the same time were riding along without overcoats. Looking back westward we had a glimpse every once in a while of Mt. Shavano and Mt. Antero in the Saguache range.

Until the new road east of Cotopaxi is opened it will be necessary for tourists to go over the road we traversed, crossing Texas creek at the Coleman range, thence down Copper gulch. This is quite a bit longer than the new road, but conditions are excellent, particularly on the first part of the ride, which is a long easy upgrade most of the way to Coleman's ranch. Just beyond that we turned up a dry creek, which is crossed and recrossed many times, and just after coming into the road from West Cliff we went down the Copper gulch road, literally in the creek bed most of the way. As this is dry 90 per cent of the time there is no trouble; in fact, con-

AT THE TOP OF UTE PASS ON THE LINCOLN HIGHWAY WITH PIKE'S PEAK IN THE DISTANCE



OVERLOOKING CANON CITY FROM TOP OF SKYLINE DRIVE; SHOWING A CONNECTING ROAD

sidering the location of the road, it is remarkably good.

Crossing the Arkansas just east of Parkdale, 55 miles out of Salida, we stopped to take some pictures of our first sight of a convict camp. This camp was just about to break up, as the convicts had the day before completed the new grade over Parkdale hill; nevertheless, we had an excellent opportunity of getting some good pictures of the way this work is carried on. After reaching the top of Parkdale hill, the present road winds across the top of the plateau, beginning the downgrade into Canon City at 59 miles. The survey has already been completed from the top of Parkdale hill to make a direct connection from this point to the top of the Royal Gorge route so that tourists coming in this direction can take in this wonderful sight without retracing their steps. The nearer we got to Canon City the more wonderful became the road and we were all frank in stating that we had never seen anything so marvelous anywhere.

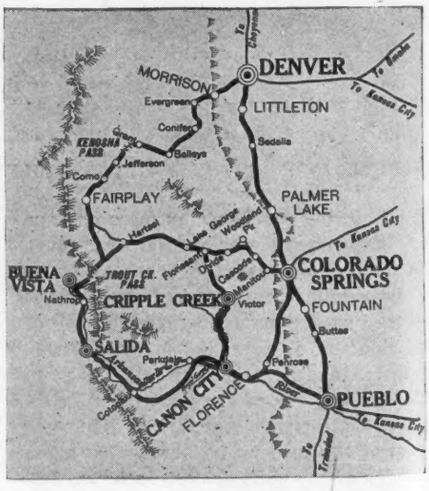
Coming down along Sand creek into the city we passed the roads leading to the top of the Royal Gorge and also the Skyline Drive. As we were to have lunch with Warden Tynan at the penitentiary we put off these side trips until afternoon. After luncheon, with C. R. McLain, president of the Rainbow Route, as escort, we first made the trip to the top of the Royal Gorge, 10 miles from the center of the city.

Practically every foot of this road after leaving the main highway, 3½ miles out, has been constructed on a new grade under the convict system and, with the possible exception of the Skyline drive, we saw no more wonderful bit of road construction on our whole trip. It was almost constantly upgrade and although there is only one short pitch of about 16 per cent in Priest canyon, it is so winding that at some points three tiers of roads could be seen below. Coming out of the top of the Royal Gorge we could drive almost to the edge where we could look down into the bottom of the gorge.

On our return trip we went up onto the Skyline drive and spent nearly an hour on what is probably the most wonderful 2 miles of road in the world. Even the pictures are most inadequate in expressing what a marvelous thing it is to drive along on the top of this hogsback road 800 and 900 feet above the city.

Canyon City's Drives

By government and state grant Canon City has acquired, as a part of the city park system, the property on which both the Skyline drive and Royal Gorge route are located. No city can boast of anything to quite match these drives, but Canon City does not seem satisfied, but is at work constructing what is known as the Tunnel drive which will go part way up the Royal Gorge just above the rail-



TERRITORY COVERED BY LAST 2 DAYS OF COLORADO TRIP

road. We spent so much time going over these routes and accepting the hospitality of Canon City people we decided to stay over and make an early start the next morning. Therefore, we were on our way again Friday morning before 7 o'clock.

A short stop was made in Florence to meet the people there and we then went direct to Pueblo on a fine road all the way. As the Pueblo enthusiasts expected that we would stay over there for lunch, we stopped 1½ hours, but we were very anxious to complete our trip by Saturday night and had 400 miles to go.

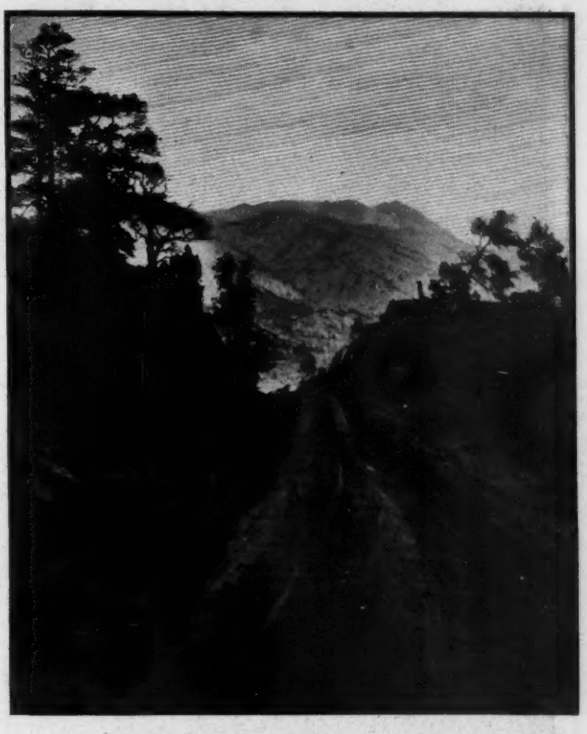
We left Pueblo at 11 o'clock and went into Colorado Springs on a road that would be the envy of most eastern communities. It is 30 to 40 feet wide, surfaced with decomposed granite and no culverts less than 24 feet wide. We were now on the prairie again, following along the Front range with Pike's peak in view all the way to Colorado Springs, where we arrived at 1 o'clock, 43 miles from Pueblo. We found all sorts of entertainment awaiting us here as in other places, but much as we would have liked to visit the many sights in the vicinity of this resort, we decided to push on to cover the 93 miles to Buena Vista.

Fine Road Over Ute Pass

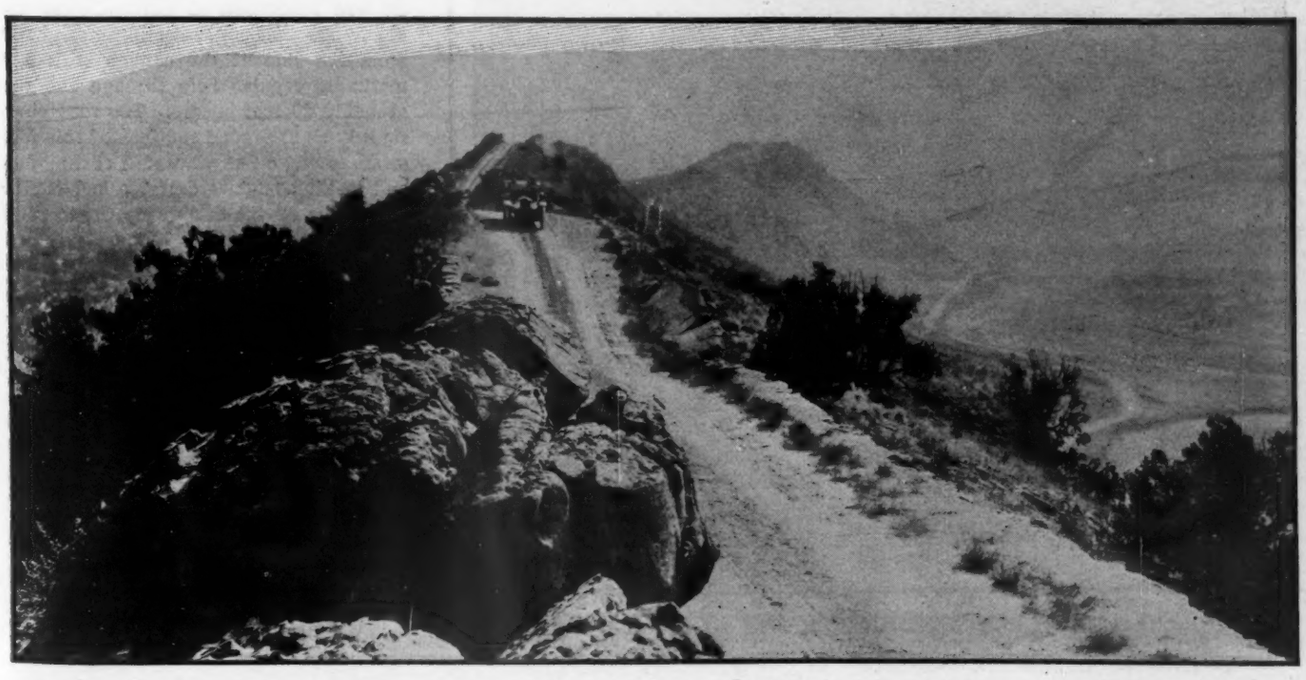
Leaving Colorado Springs, the route is almost straight out Colorado avenue to Colorado City and into Manitou, thence up Ute pass, coming very close to Rainbow falls. Colorado Springs is located so close to the Rampart range, which is really a part of the Front range, that the rise begins almost immediately from the city. However, the road conditions are so wonderful over Ute pass that we hardly realized were going to an altitude of over 9,000 feet, which was reached at Divide, 24 miles out. The ascent is almost constant, but there were no grades above 10 per cent. The whole region up to this point is dotted with resorts located along Fountain creek, the more prominent, after leaving Manitou, being Cascade and Green Mountain Falls and Woodland Park.

From Divide the road is a gradual descent of about 1,000 feet into Florissant with a slight rise again to Hartsel in South park. The route after leaving Divide, although not having the magnificent scenery of some others we had been over, was a very picturesque trip and a part of what is known as the Lincoln highway.

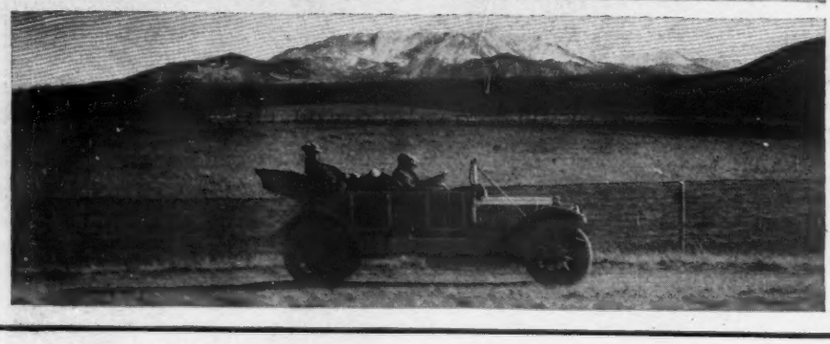
Just west of Hartsel we joined in with our route out of Denver over which we came on our second day out, so that it was not necessary for us to go over Trout Creek pass again. After returning to Hartsel, 10 miles, where we arrived at 5 o'clock, we had covered 170 miles and, considering the stops we had made at Florence, Pueblo and Colorado Springs, it shows pretty well the kind of roads we had been over. As we were very anxious to shorten the mileage on Saturday as much as possible, we decided to start back for Cripple Creek, so returned toward Colorado Springs as far as Florissant, which we reached after dark, then left the Colorado Springs road, going directly 19 miles southeast into Cripple Creek. This was the only night driving we did on our whole trip and needless to say we were sorry to miss even this small part. Nevertheless, it was quite a clear moonlight night and we were able to get a fair idea of what a beautiful ride it must be in daylight on a fine road all the way. We were especially sorry to miss the view from the top of the mountain just before coming down into Cripple Creek. Not that we were thinking much of it at that particular time, as there is no real fun driving at an altitude of nearly 10,000 feet



DEAD MAN'S CANYON ON ROAD TO COLORADO SPRINGS



THE SKYLINE DRIVE LOOKING EASTWARD OVER CANON CITY



CONVICT-BUILT ROAD WINDING FROM CANON CITY TO COLORADO SPRINGS
WINDOW ROCK IN PHANTOM CANON, BELOW CRIPPLE CREEK
ROAD IS THOROUGHLY SIGNBOARDED BY COLORADO SPRINGS CLUB
VIEW OF PIKE'S PEAK FROM NEAR DIVIDE

after dark in October. The air was very chilly and sharp and we were all mighty glad to finish our day's run of 220 miles.

Before leaving Canon City, we had made considerable inquiry about the route between there and Cripple Creek, and although we had been told it was a very pretty trip and road conditions were all right, no one had any special praise for it as a scenic route so that we were much surprised. The next morning a little more than a mile out of Cripple Creek we drove into Phantom canyon, which turned out to be one of the most wonderful canyons on our whole trip. We were on a typical gorge road again in a narrow canyon, the rocks above from 600 to 1,000 feet high. The highway is quite narrow and cut into the rocks or ballasted out over the creek a considerable part of the distance, but not more than 20 feet above the creek at any point. The descent is almost constant out of Cripple Creek for nearly 9 miles, though there are no sharp pitches. However, it should be driven carefully, as there are many narrow places with sharp turns.

Window Rock in Phantom Canyon

No doubt thousands of people have heard of Window rock, which is passed in Phantom canyon about 5 miles south of Cripple Creek, but no one in our party had been told a thing about it. This is an odd formation of perpendicular rock about 800 feet high, coming straight out from the side of the canyon with a remarkably regular hole through the rock, probably 20 feet square. The road curves sharply right around the foot of this formation, giving a fine view of it coming down and looking backwards. We had our last good view of the Sangre de Cristo range, of which we obtained a glimpse every now and then through the openings far ahead.

About 9 miles south of Cripple Creek and just after the canyon is widened out the road climbs up along the side of the cliff about 600 feet above Four-mile creek and winds along on one of the most remarkable pieces of grade we had been over. Almost every foot of it had been ballasted out with abutments from 5 to 25 feet high. The valley is wide enough so that the vistas from each side are wonderful, although the very location and construction of the road itself proved to us more and more that the people in Colorado did not appreciate what they had to offer the tourist.

About 12.5 miles out of Cripple Creek

it turned right at a little side valley, leaving the main creek for a considerable distance and from here on it is a gradual down grade direct into Canon City. Leaving here at 2 o'clock we headed for Denver by way of Colorado Springs on the last leg of our long-to-be-remembered trip. We had heard everywhere in this section of the wonderful 50 miles of road between Colorado Springs and Canon City, a convict road 26 feet wide practically all the way. We had also expected to see some rather striking scenery, but were quite disappointed, for, although there is no question but what as a boulevard it is a most marvelous piece of road construction, it can nowhere near compare in scenic attractions with others in this section.

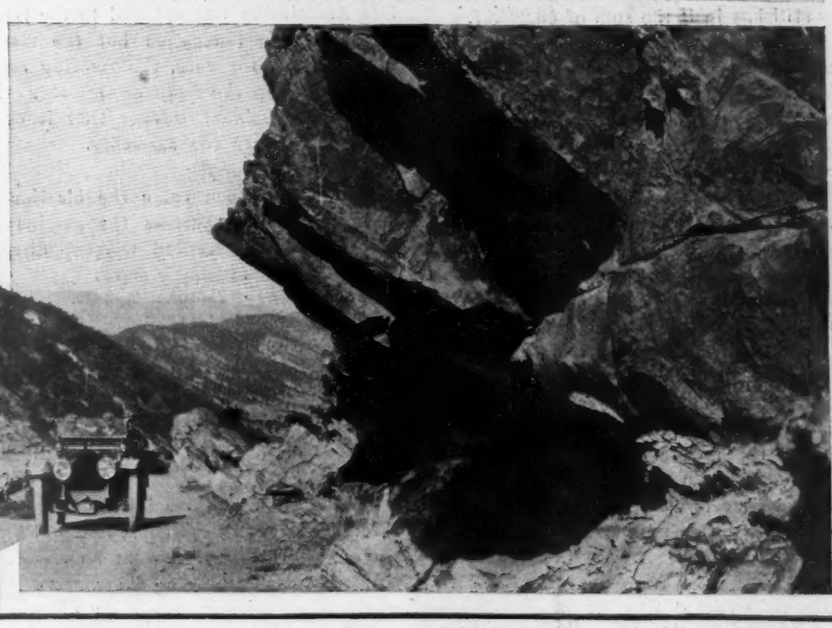
Through Dead Man's Gulch

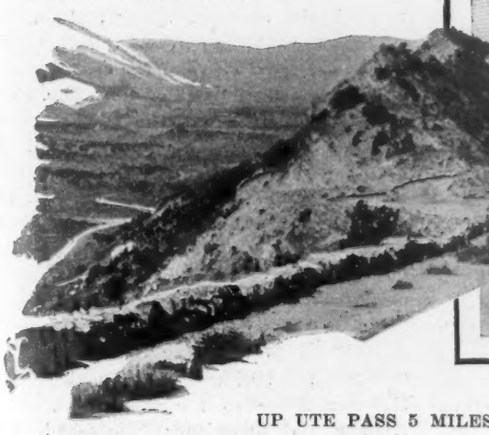
The first part of the route is identical with the Pueblo road to Florence and thence through Penrose directly northeast into Colorado Springs. Some parts of it through Salt canyon and Dead Man's gulch are very winding with sharp turns, but there are no grades to exceed 6 of 7 per cent at any point on the route, and without hard driving at any time we made the 48 miles into Colorado Springs by 4 o'clock.

As we still had 70 miles to cover, we left Colorado Springs at 4:15 with a desire to cover as much of the route as we could before dark. This, like the road from Pueblo, was part of what is known as the Great North-and-South highway, and follows closely along the foot of the Front range. This section of it is much closer to the mountains than at other points, Palmer Lake, 23 miles north of the Springs, being practically in the foothills.

Just before reaching Littleton we came onto good, hard, smooth roads again and the last few miles into Denver were macadam. We pulled up to the hotel at 7:30, making our day's run of about 178 miles, completing probably the most remarkable route and photographic-gathering trip ever gone over by any party. It is one which will long be remembered by everyone in the White car, and our one big wish is that next year will see us back in Colorado in some unexplored sections.

(Concluded)





UP UTE PASS 5 MILES OUT OF COLORADO SPRINGS
BEAUTIFUL CLIFF ROAD ALONG FOUR-MILE CREEK
VIEW FROM TOP OF SKYLINE DRIVE NEAR CANON CITY

Enos of Buffalo Chosen A. A. A. Leader

Annual Meeting of National Organization, Held in Chicago, Sees Retirement of Hooper—Assembly Refuses to Consider Ohio Case—Finances in Good Shape, with Money in Treasury—Richmond Chosen for 1913

CHICAGO, Dec. 3—The annual meeting of the American Automobile Association, held for the first time in many years in the west, was an interesting one which was marked by only one fight—the Ohio clash. It also saw the retirement of Robert P. Hooper, of Philadelphia, as president and the installation of Laurens Enos, of Buffalo. The national organization was shown to be in a flourishing condition, with money in the treasury and all bills paid, while the good roads cause was given the expected boost.

The meeting was held yesterday and today and wound up this afternoon with a meeting of the new executive committee. The session yesterday consisted first of a meeting of the old directors at which reports were read. Then came the general meeting of the A. A. A. delegates at which the new officers were chosen, while last night the motorists broke training, so to speak, and enjoyed themselves at the annual banquet of the organization, which was held in the Auditorium, which also housed the annual meeting.

Reports on Finances

The first meeting brought out interesting facts concerning the condition of the American Automobile Association. Treasurer Bonnell explained the expenditure of the $64,000 which came into the A. A. A. treasury during the year and he gladdened the hearts of the delegates by telling them that all bills are paid and that the treasury still has in it the sum of $3,293.07.

William Schimpf, chairman of the contest board, also had pleasant news for the delegates. When he took hold of the office there was a deficit, but so well were affairs handled during the present year that Mr. Schimpf was able to turn over $5,000 to the national treasury, report that all his bills were paid and that there still is a small surplus in his bank. The chairman of the contest board also reported an extra good season. His board has granted 132 sanctions. Twenty more tracks than ever before have been licensed and the number of meets held during 1912 has been a record-breaker. There were ninety-four and this was supposed to have been an off year. In 1911 there were only fifty-two and in 1910 seventy-two. Nineteen of the 1912 dirt track meets were on 1-mile tracks and twenty-two on ½-mile ovals.

So well has the A. A. A. safeguarded drivers and spectators that not one fatality occurred at dirt track meets sanctioned by the national organization. While a few drivers have been injured, none was seriously hurt, while the records show that not a spectator was injured during the year. The contest board took in $13,225 in sanction fees; $1,140 was collected in drivers' licenses; $100 was paid for stock car certificates and $320 was paid over for track licenses. The expenses of the board amounted to $8,170.

Following Mr. Schimpf came Howard Longstreth of the touring board and George C. Diehl of the good roads board, both of whom made interesting reports which told of the great work those two committees have done during the year just ended. Mr. Longstreth told of the popularity of the New York headquarters, how the work of collecting road data for tourists is progressing, and how four transcontinental trails have been blazed. Mr. Diehl of course bubbled over with enthusiasm on good roads. He predicted the success of the federal aid movement.

Chairman Batchelder of the executive committee made a brief report in which he told how the association now has 451 clubs allied with it, 148 more than the A. A. A. had a year ago. There are forty-four active state associations.

The Ohio situation provoked considerable fireworks. The Ohio Automobile Federation desired to be recognized as a state association, whereas the Ohio State Automobile Association already has the franchise. Efforts were made at Atlantic City to gain recognition for the federation and the proposition was passed over to the annual meeting. The Ohio State Automobile Association was opposed to the recognition of the federation but the matter never came to a vote, the meeting refusing to take up the question, following the ruling of President Hooper that it could not come before the assembly.

New Officers Chosen

In the afternoon came the election of officers and the report of the nominating committee was accepted without dissent. This gave the following slate:

President—Laurens Enos, Buffalo.
First vice-president—John A. Wilson, Pennsylvania.
Second vice-president—Dr. H. M. Rowe, Maryland.
Third vice-president—R. W. Smith, Colorado.
Fourth vice-president—F. L. Baker, California.
Fifth vice-president—Asa Paine, Minnesota.
Secretary—J. N. Brooks, Connecticut.
Treasurer—H. A. Bonnell, New Jersey.
Chairman executive committee—A. G. Batchelder, New York.

Two good roads resolutions were put through designed to promote national highways. The association went on record as being opposed to the Shackleford bill, which provides for a system of paying counties for improved highways. A resolution asking congress for funds also was passed. The other good roads resolution was for the establishment of a roads travel bureau under the direction of the secretary of the interior at Washington.

It also was decided to open a branch headquarters in Washington. At first there was some talk of moving the New York office there, with the exception of the touring board and contest board, but it was deemed best to make Washington only a branch.

There was a lively fight for the next annual meeting, participated in by Buffalo, Texas and Virginia. The last named won out and the next session will be held in Richmond.

At the meeting of the new executive committee today President Enos announced the reappointment of the following chairmen: Contest, William Schimpf; good roads, George C. Diehl; touring, Howard Longstreth; legislative, Charles T. Terry.

NEW YORK BOND ISSUE CARRIES

New York, Dec. 2—While the official count has not been completed, it is apparent that the referendum to the people of New York for the $50,000,000 bond issue for completing the system of state good roads has been carried by over 400,000 majority. During the past 3 years the state has expended an appropriation of $50,000,000 on its roads and it was necessary to go before the citizens in order to get a similar sum for the finishing of the work.

That the bond issue should carry by such a tremendous majority indicates the favorable attitude toward good roads all over the state. While the whole motor fraternity favored the issue and worked for it, the project had the support of progressive citizens throughout the state, without reference to car ownership or interest.

The road system under contemplation covers a trunk line system, the details of which have not been announced. It is quite certain that it will include a route through the Mohawk valley and another through the southern tier of counties, linking up the great cities of the central, western and southern parts of the state. The mountain districts and the northern tiers will also be provided with magnificent highways. Roughly speaking, the authorized bond issue is sufficient to accomplish the building of about 4,000 miles of first-rate road.

MICHIGAN RECOMMENDATIONS

Lansing, Mich., Dec. 2—In his recommendations to Governor Osborn for new legislation to be incorporated in the executive's message to the legislature, State Highway Commissioner Townsend Ely asks some important changes in the high-

way laws of the state. His most important request is for giving the department authority to maintain roads after they are built. He says many roads built by state and counties under the state reward system of road work are allowed to deteriorate after being completed. He recommends the state pay a small amount per mile for their upkeep, and take charge of the work. State inspectors, he declares, often find reward roads in poor shape but can do nothing.

Commissioner Ely also recommends the roads be made wider. At present the state allows the counties $500 for each mile of road 9 feet in width. Macadam road of the same width brings $1,000 per mile in state reward. He advocates the department be allowed to build the roads up to 11 feet in width and that it be allowed to pay the county $100 per mile for each foot in excess of nine. He believes the 9-foot road is too narrow for main thoroughfares.

He also recommends that car owners be allowed to pay a specific tax and that they be exempted from state license and local tax, and that the proceeds be turned over to the state highway department for its work. He recommends a graduated tax of from $5 to $20 for each machine.

The department spent $235,000 this year. The department already has applications for 600 miles of state reward road and will need at least $400,000 for 1913. Ely says if each car paid $10 it would make up the amount. Motorists now are paying a local tax of $26 and for a state license costing $3, this being applicable to the average $1,000 car.

HOPE FOR DETROIT-TOLEDO ROAD

Detroit, Mich., Dec. 2—Through the new federal law setting aside a fund to be used in the building of post roads, car owners and road enthusiasts of Detroit hope to be able to complete the 60-mile boulevard between this city and Toledo, Ohio, of which 36 miles are unfinished.

Woodbridge N. Ferris, as soon as he assumes the duties of governor, will be petitioned to place the matter of securing a state appropriation before the legislature that government aid in the project may be had. Under the act recently enacted the money is to be granted to the states in the event that the locality in which the road is to be constructed appropriates double the amount.

The governor has been requested to select 50 miles of road in Michigan and secure the appropriation of $20,000 by the state or locality in which the road is to be built, in which event the government will allow $10,000 for the work.

Edward N. Hines, chairman of the Wayne county good roads commission, is enthusiastic over the prospects. He declares that the state easily can appropriate $15,400 required under the federal act to complete the 36 miles necessary to the Toledo-Detroit road. He points out that at the present time Wayne county pays one-fifth the state taxes.

All of the road within Wayne county has been completed and the 3 miles necessary in Ohio also have been finished. The uncompleted section is in Monroe county.

SAVANNAH TO BID FOR RACES

Savannah, Ga., Dec. 2.—Negotiations will be entered into with the Motor Cups Holding Co., of New York, by the Savannah Automobile Club early this month looking to securing the grand prize and Vanderbilt cup races for this city for next fall. The club determined at its last meeting to make a bid for the races, contingent upon the co-operation of the military and the county commissioners and the securing of a representative number of entries for the events.

The announcement that a conference with the officers of the Motor Cups Holding Co. has been arranged is authorized by Harvey Granger, president of the club. President Granger is in receipt of a letter from W. K. Vanderbilt, in which it is stated that the Motor Cups Holding Co. has considered the letter of the local club expressing a desire to secure the races for next year, and that the officers of the company will be ready to meet a committee from Savannah in New York in December to consider the proposition.

The answer of the several military commanders to the request from President Granger that they guard the course next year if the races are held have been made. Practically all of the companies have decided to volunteer their services for patrol duty.

FREIGHT CARS MORE PLENTIFUL

New York, Dec. 2—The freight car shortage has turned the corner and a quick recovery to normal conditions is looked for in the traffic world. The peak of the load was passed about November 18 and the fortnightly tabulation issued by the American Railway Association covering conditions up to November 21 shows that the net shortage for that period was 51,112. As compared with the preceding report, this shows a lessening of the shortage of fifty-seven cars.

As an evidence of the strenuousness of the situation it may be said that at the corresponding period of 1911 there was a net surplus of freight cars amounting to 23,110. The peak of the load, however, was not passed in 1911 until a considerably later date. The box car situation improved to a marked extent.

ANNUAL BANQUET OF AMERICAN AUTOMOBILE ASSOCIATION HELD IN CHICAGO

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LEFT-SIDE STEERING

OF 140 leading makes of American cars on the market for next year approximately forty-seven of them are offering chassis with the steering wheel on the left side and with the brake and change-speed levers either operated by the right or by the left hand.

One year ago it was expected that 1913 would show greater leanings towards the left-side practice, but the developments of the past 8 months have proven that some of the leading makes prefer to keep the steering wheel on the right. Although only 33 per cent of the different makes of cars list the left-side wheel, yet considerably more than this percentage of the total number of cars manufactured will be so fitted, as some of the biggest makers use it.

With the advent of the left-side wheel 4 or 5 years ago it was generally expected that the light cars would be pioneers in this design, and that years would have to pass before the higher-priced machines would fall in line. So far as the announcements for next year are concerned it is apparent that the higher-priced makers are giving the question much consideration, and already new $5,000 models, six-cylinder cars, have been announced with left steering. Some makers of high-powered machines, who are bringing out smaller sizes, are putting the wheel on the left. It is noteworthy that concerns using the left-side wheel during the past are adhering to it in their new models, in fact there are not a few cases where carried-over models with right-hand steering are being converted into left-hand.

It is more and more apparent that left-hand steering is gaining on a sure pace, a pace not spectacular but widespread and certain. The value of left-hand steering in cities is acknowledged by all, and should other states follow the course of Massachusetts in requiring motor cars to pass trolley cars on the left side it will mean that left-hand steering will have to be hurried on by many who are at present holding back, apparently halting between two opinions.

Turning to Kerosene

WITH prices of gasoline rising from month to month, and with country-wide rumors of possible shortage due to the unexpected consumption by commercial motor vehicles greatly in excess of the demand anticipated by the fuel producers, it is not disappointing to hear of carbureter enthusiasts in many states experimenting with embryotic kerosene carbureters and obtaining generally good results. The work is fascinating because kerosene at 8 cents per gallon is more attractive than gasoline at 25, a price charged in some of the metropolitan centers. The attraction is all the greater because of greater mileage that is being obtained, gallon per gallon, than with gasoline.

IT is a fairly long step today from the grade of gasoline that is being offered to the grade of fuel known as kerosene that is purchased at 6 or 8 cents per gallon. Is it best to bridge this gap in one leap or to go slowly, improving the carbureter to meet the gradual increasing of the weight of the gasoline offered? Undoubtedly the latter course is preferable. To the carbureter maker it means alertness personified. He must not build for today; building for tomorrow will not suffice; rather, he must sweep his telescopic brain across the vistas of future weeks and months and years, peering into the mists of the future, lifting the veil where possible and at other times fashioning his course according to the events of the present.

IT is not entirely an undeveloped field. The various agricultural competitions of the past summer, in which gasoline-propelled tractors using kerosene fuels have operated with the utmost success, nearly all of them starting on gasoline and switching onto kerosene after the motor has warmed up. The switching from one fuel to another has been so simplified that it is not any more difficult than switching from a battery to a magneto ignition set. The extra gasoline tank is readily incorporated with the main fuel tank and a small quantity of fuel is sufficient for many weeks of starting.

CARBURETERS are at present in use by experimenters in America in which the starting gasoline tank is eliminated and the use of gasoline confined to priming the cylinders. With such carbureters not more than 3 minutes are needed to sufficiently warm the motor so as to permit of traveling. If gasoline has to be used for priming purposes it would seem desirable to use it as a fuel for 3 or 4 minutes after starting so that scarcely any delay, more than that needed with standard gasoline today, would be necessary.

CARBURETER engineers are approaching the kerosene fuel problem from different viewpoints, only some of which have come to the public attention to date. There are several who are experimenting with heat, that is, bringing the temperature of the kerosene up to a certain mark before spraying or mixing it with air, the assumption being that the fuel must be vaporized before mingling with the air, otherwise it is considered difficult to get economic consumption. The heat question is one of easy solution, as the exhaust manifold is a source of almost inexhaustible heat, sufficient at all times to give any desired temperature to the fuel.

WHILE some are experimenting with heat, others are entirely ignoring it and aim to produce a carbureter, which, because of its inherent design, will be capable of handling kerosene in a manner as satisfactory as the carbureter today dispenses the gasoline.

NO matter what may be the carbureter solution, one thing is certain, the carbureter makers, some of them at least, will be equal to any emergency that the fuel situation may demand. With every step in the use of heavier gasoline there has been the general call-to-arms of carbureter brains, with good results; and even if May 1 were to see a general introduction of real kerosene it would find many satisfactory carbureting devices capable of handling it.

Europe Interested in Speedway Race

PARIS, Nov. 23—French drivers and manufacturers have not hidden the fact that they would like to compete for the big prizes offered by the Indianapolis speedway for the 500-mile race to be run on Decoration day. Charles W. Sedwick, who is now in Paris in the interests of the Indianapolis motor speedway, states that every effort is being made by the Peugeot drivers to bring over the full team of three cars which won first place in the French grand prix and the Le Mans race this year, and are recognized as the fastest road racers in Europe.

These cars slightly exceed the piston displacement limit, but can easily be reduced to come within the rules. It is calculated by Georges Boillot, the head of the Peugeot racing team, that his men can put up a good display at Indianapolis and get back to France in time to compete in the grand prix on July 10. The Peugeot race drivers are Georges Bcillot, Jules Goux, and M. Zuccarelli.

Albert Guyot, one of the leading French light car racers, has conditionally promised to put in an eight-cylinder car of his own construction. Alfred Koecklin, a two-cycle expert, who figured in this year's French 3-liter race, also is negotiating for the American classic. Among individual drivers who are endeavoring to secure mounts for the 500-mile race are Louis Wagner, Victor Hemery, Arthur Duray, and Victor Rigal, all of them recognized as the best talent Europe can produce.

Mr. Sedwick is of the opinion that before he sails for New York he will have arranged for some of the best European cars and drivers to appear before the American public on May 30.

BRAGG'S CASE SETTLED

Milwaukee, Wis.—To settle the long-drawn out controversy between the Milwaukee Automobile Dealers' Association, promoter of the 1912 Vanderbilt cup, grand prix and other road races at Milwaukee, and Caleb S. Bragg, winner of the 1912 grand prix, a controversy which has stirred up much feeling and tended to make the disappointment of the financial end of the road races much more difficult, the M. A. D. A. has authorized the following statement over the signature of Emil Estberg, vice-president:

The dealers' association wishes the public to know the facts in relation to its dispute with Caleb Bragg, arising over the association's demand for the payment of his entry fee as a driver in the race. It has been discovered that Bragg, in no event, agreed to pay more than $500 as his entry fee. Upon the race being necessarily postponed, Mr. Wagner, the starter, told Bragg that if he would remain in Milwaukee and drive, his entry fee would be waived. At a later meeting the association volunteered to pay Bragg's expenses while remaining here, which, as it now appears, was intended to offset the waiving of the entry fee. Both sides have now agreed that the fair way to settle all differences, in view of all the conditions, is to permit Bragg to pay his original entry fee and deduct therefrom his expenses, as agreed, which has been done to the mutual satisfaction of everybody.

C. W. Sedwick Lining Up Foreign Drivers for the Indianapolis Meet

Statements contrary to or in addition to the foregoing are not in accord with the facts as they are found upon a complete investigation of them.

Any statement or statements made public reflecting upon Bragg's observance of the rules of the sport of motor car driving do not express the opinion of the association. We know of no reason for making them.

The finance committee of the M. A. D. A. is making excellent progress in raising funds to liquidate the aggregate indebtedness of about $43,000 caused by the race meet. Creditors have been lenient in the matter and the let-up of pressure of demands has made the work of financing the big deficit much lighter.

RICHMOND MEET RESULTS

Richmond, Va., Nov. 30—The raising of the outlaw ban on the mile circular dirt track of the Virginia state fair grounds, where today and yesterday, under the sanction of the American Automobile Association the Richmond Automobile Club conducted a professional meet and the lowering of the track record on the 2 successive days by Louis Disbrow, driving Simplex Zip were features of Richmond's meet.

Louis Disbrow, in his Jay-Eye-See, made an effort on Friday at Barney Oldfield's record of 1:03⅕, made on the local track 3 years ago, and failed, covering the distance in 1:09½. On Saturday Disbrow with Jay-Eye-See made the mile in 1 minute flat, and on Friday in the 10-mile handicap, with the Simplex Zip, he made the final mile in 1:01. Summary:

FRIDAY

Five miles—Minker, Klinekar, won; Morton, Klinekar, second; Allport, Stevens-Duryea, third. Time, 1:29.

Exhibition drive—Disbrow, Simplex. Time, 1:09½.

Ten miles for cars under $1,600—Taylor, Buick, won; Koehler, Ford, second; Booth, Maxwell, third. Time, 14.20½.

Three-heat race—Disbrow, Simplex, won.

Five miles—Nikrent, Case, won; Barber, Warren, second. Time, 6:33½.

Ten-mile non-stock handicap—Disbrow, Simplex, won; Morton, Klinekar, second; Minker, Klinekar, third. Time, 11:03.

SATURDAY

Five miles—Minker, Klinekar, won; Morton, Klinekar, second; Allport, Stevens-Duryea, third. Time, 6.17½.

Ten miles, non-stock, 231-300 class—Wishart, Mercer, won; Nikrent, Case, second. Time, 10:43½.

Trial for track record—Disbrow, Simplex. Time, 1:00.

Five miles—Taylor, Buick, won; Kohler, Ford, second. Time, 7:13¾.

Ten-mile, non-stock handicap, 231-450 class—Nikrent, Case, won; Morton, Klinekar, second; Lewis, Stutz, third. Time, 10:59¾.

Five miles, non-stock, handicap, 45-600 class—Disbrow, Simplex, won; Lewis, Stutz, second; Nikrent, Case, third. Time, 5:16½.

Five miles—Disbrow, Simplex, won; Lewis, Stutz, second; Morton, Klinecar, third. Time, 5:21¾.

Twenty-five miles, non-stock, free-for-all—Disbrow, Simplex, won; Nikrent, Case, second; Morton, Klinekar, third. Time, 26:49.

Coming Motor Events

SHOWS

December 7-22—Paris salon.
December 16-21—Show at Seattle, Wash.
January 2-10—Importers' Salon, Hotel Astor, New York.
January 4-11—Cleveland.
January 4-11—Montreal.
January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.
January 11-18—Milwaukee, Wis.
January 11-22—Brussels, Belgium.
January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.
January 20-25—Philadelphia.
January 21-26—Toledo Show.
January 25-February 1—St. Johns, N. B.
January 25-February 1—Show at Providence, R. I.
January 25-February 1—Montreal, Canada.
January 27-February 1—Ottawa, Ont.
January 27-February 1—Scranton, Pa.
January 27-February 1—Detroit.
January 27-February 1—Pleasure Show, Buffalo, N. Y.
February 1-8—Chicago pleasure car show; National Association Automobile Manufacturers.
February 3-8—Show, Washington, D. C.
February 10-15—Chicago truck show.
February 10-15—Minneapolis.
February 12-15—Geneva, N. Y.
February 15-22—Newark, N. J.
February 15-22—Albany, N. Y.
February 16-23—Richmond, Va.
February 17-22—Kansas City.
February 20-22—Canandaigua, N. Y.
February 24-March 1—St. Louis, Mo.
February 24-March 1—Memphis, Tenn.
February 24-March 1—Cincinnati, O.
February 24-March 1—Omaha, Neb.
February 26-March 1—Fort Dodge, Ia.
February 26-March 1—Glen Falls, N. Y.
March 1-8—Pittsburgh.
March 8-15—Boston pleasure car show.
March 12-15—Ogdensburg, N. Y.
March 18-22—Syracuse, N. Y.
March 18-22—Truck show, Buffalo, N. Y.
March 19-26—Boston truck show.
March 20-24—New Orleans, La.
March 24-29—Indianapolis.

TOLEDO TO MOTORIZE

Toledo, O., Nov. 30—The council this week passed a resolution authorizing legislation for a $200,000 bond issue to equip the fire department with motor-drive apparatus. Safety Director Mooney who recently appeared before the finance committee pleading for the substitution of the motor-driven apparatus for horse-drawn vehicles declares that the saving of horses and their keep alone will pay the interest and retire the bonds. He declared that the upkeep of the apparatus will not be greater and the saving in natural gas now used to keep water heated in the steamers will more than pay the gasoline bills. Mooney stated that it cost but $450 for the fire chief's car in 3 years, during which time it has traveled 42,000 miles and is still in good shape.

DEATH OF OMAHA DEALER

Omaha, Neb., Dec. 2—James J. Deright, president of the Deright Automobile Co., of Omaha, one of the most prominent and well known dealers in the middle west, was instantly killed in his private room at the company's building Thanksgiving morning. The entire right side of his head was blown off by the apparent explosion of two shells in a double-barreled shotgun.

Makers Tell of 1913 Contest Plans

Motor Age Asks Members of the Industry What They Intend Doing Next Season—Replies Encouraging—Lozier May Race Light Six—Stutz, Mason, Ames, G. J. C., Staver and Speedwell Promise Support in Speed Battles

CHICAGO, Dec. 2.—Racing prospects for 1913 have brightened within the last week. The Savannah Automobile Club has decided to re-enter the promotion field and it is understood it will ask for both the Vanderbilt and the grand prix; Milwaukee also would like the same two classics; New York dealers have organized with the announced intention of trying to return to the east the Vanderbilt cup event, while now the positive declaration is made that the Elgin road races will be put on in the fall of 1913. The meet will take place the latter part of August as usual and it will be marked by the adoption of the 450-inch limit, an idea originated by Indianapolis and intended to encourage the competition of American manufacturers by eliminating the specially-built big racers.

Elgin Meet Certain

The 1913 plans were discussed last Tuesday night when the Elginites gave a dinner to the members of the contest committee of the Chicago Automobile Club. It was agreed that the partnership be continued and the prospects were declared to be rosy. An innovation decided upon was to have only one race each day instead of two or three as has been customary. The first day will be given over to a non-stock race for cars 300 cubic inches and under, while the second day the one event will be for cars 450 cubic inches and under. The promoters have decided to make the distance in both races the same—about 300 miles—in order that comparisons may be drawn as to the relative speed abilities of the two classes. Heretofore it has been customary to hold the small cars down to short distances.

Private owners are to be encouraged to enter and with this idea in mind there will be a special trophy offered. E. C. Patterson, who tried hard to import the Peugeot team last summer, has pledged himself to make an entry. It is thought he has in mind trying for an English Sunbeam.

The meet will mark the re-entry into competition of a famous trophy which has been on the shelf since 1910—the Cobe cup. Ira M. Cobe, president of the Chicago Automobile Club, has agreed to turn the trophy over for the Elgin meet, provided the name is changed. Therefore, it is to be called the Chicago Automobile Club cup and it probably will be offered in the first day's race. It is hoped to have the Elgin National for the second day, provided an agreement can be made with the Chicago Motor Club, which holds the deed of gift.

What of 1913?

Naturally these announcements give rise to the one main question: Will the American manufacturers give promoters more assistance than they did this year or will these promoters have to rely upon foreign cars for their attractions in racing events and entries from agents and private owners for the reliabilities and hill-climbs? This is the question of the hour with those who look to the sporting side of motoring for enthusiasm and they await the verdict of the American industry.

It must be confessed that the season of 1912 was an off year. American makers as a whole held aloof and promoters had a sorry time of it. There was no Glidden tour, there were few reliabilities and fewer hill-climbs. Racing had a hard time of it and not more than a half-dozen con-

Excerpts from Letters Received by Motor Age from the American Motor Car

MOTOR AGE has undertaken to secure a line on the 1913 contest season by asking the various car manufacturers to outline their plans for the coming season.

Some of the replies received are interesting, showing that the manufacturers are studying the proposition. While several state positively they will not support contests, yet they say they look with favor on the sport and are not averse to their agents participating. Here are excerpts from letters received by Motor Age:

Lozier Motor Co.—The Lozier company has withdrawn from racing and probably will take no active interests in contests next season. We have received great benefit from our participation in endurance contests during the past 5 years, not only as regards advertising and publicity, but through the valuable results obtained by the engineering department. We are placing on the market a new model light six and it is possible this car may be entered in some of the big national events to which it is eligible simply for the purpose of demonstrating its speed and endurance and to see if the engineering department can gain any benefits from such tests.—C. A. Emise, sales manager.

Hudson Motor Car Co.—We have at this date made no decision as to a contest campaign next year. Broadly speaking, we favor endurance and touring competitions, speedway and road racing. We are not in favor of racing on mile dirt tracks. In general we realize thoroughly the important part which contests of all kinds have played in the development both of the engineering and selling ends of the business. We have little patience with the complacent attitude of some of those who have expressed themselves in print to the effect that the motor car now is a perfect mechanism, hence no longer requiring the influence of contests as a spur and guide to progress. Just so long as yearly models are produced and just so long as radical changes of any kind are made in motor car construction from season to season, just that long are mistakes sure to be made in matters of design and construction. Greater and greater speed capacities have been demanded by the purchaser during the past 2 or 3 years. It is practically impossible for any manufacturer to test his cars upon the road under the condition of maximum speed of which they are capable in the hands of the user. It has been our experience that the entering of a new model in a 200 or 300-mile road race has taught us more as to weak points in a day than have months of ordinary driving on the road. This condition has held during past years and we cannot see why this same condition will not be applicable to future years. It is possible but debatable, that contests may not now play so important a part in the merchandizing end of the business. We do believe that they play just as important a part as they ever did in the engineering and designing ends.—H. E. Coffin, vice-president.

Palmer & Singer Mfg. Co.—We are firmly of the opinion that racing by a manufacturer is one of the best means of introducing his product but it is absolutely necessary to follow it up with extensive advertising if one wishes to derive all the benefits. With new cars or factories having tremendous outputs we should say racing is absolutely essential; in our case however, it is entirely unnecessary. With our limited output we find no difficulty in disposing of the number of cars we build. Were we in a different position we undoubtedly would heartily support speed contests as well as endurance runs, for they undoubtedly stimulate interest in the minds of at least 75 per cent of the buying public.—Charles A. Singer, Jr., vice-president.

National Motor Vehicle Co.—We as manufacturers retired from racing for an indefinite period, after Memorial day, 1912, and we have made no plans whatsoever for the future and do not anticipate taking part in any events during the season of 1913. However, were we still interested in racing we would prefer road racing and speedway racing and would not under any consideration consider racing on dirt tracks.—George M. Dickson, manager.

J. I. Case Threshing Machine Co.—We are not in shape at this time to give any definite information as to contests. We will say, however, that we favor speedway and dirt track racing. We will give our usual support to reliability runs, although there is some question about hill-climbs.—M. C. Meigs, advertising manager.

Ames Motor Co.—We have just finished a racing car and it is our intention to support road and dirt track racing.—G. W. Yeoman, vice-president and general manager.

G. J. C. Motor Co.—We will support racing next year. We will put out two cars which will be driven by Paul Thebaud and Thomas Costello.

Mason Motor Car Co.—We will as manufacturers support racing next year. We expect to participate in the national events and will make such support as is necessary to agents. We now expect to enter at Indianapolis and will put in as many cars in the 500-mile race as we are permitted to nominate.—E. R. Mason, president.

Henderson Motor Car Co.—This factory will not personally enter or support racing, but there is a possibility we might enter a few reliability runs or hill-climbs.—W. D. Edenburn, manager newspaper department.

United States Motor Co.—We haven't any very definite plans yet for our contest program for next year, but in a general way our disposition is to support reliability runs. None of the companies in the United States Motor Co. will support dirt track racing next year nor will they participate in road events. But we cannot but feel that some benefit

Elgin Road Races for Next Year Certain

Chicago Automobile Club Will Again Manage Meet—Only One Event to be Run Each Day—First Contest for Cars 300 Inches and Under While Second Has 450-Inch Limit—Distances of the Two Classes the Same

cerns held out a helping hand. Dirt track racing, like a lily in a stagnant pond, flourished because of the activity of three racing combinations which swung through the country, promoting meets and raking in the shekels. While there were road racing meets at Santa Monica, Tacoma, Elgin and Milwaukee, none scored a financial success, although the sport itself was keen and the races themselves proved the public has not lost its interest in this form of sport.

There were no fatalities on road or track in actual contests, although death claimed David Bruce-Brown and Mechanic Scudaleri in the practice at Milwaukee. No other sport into which the element of danger enters can show such a clean bill of health for 1912.

Outlook for Next Year

For 1913 it would seem right now as if the prospects are brightening to a considerable extent. Agitation has been started to interest the makers, the appeal being based on the publicity standpoint, so it is thought help will be had from unexpected quarters. Of course it is rather early to expect declarations from many as to their plans for next year. Many are holding back waiting for others to announce themselves, but it would seem as if promoters can look for more assistance than they had this year.

For the purpose of getting a line on the outlook, Motor Age wrote many of the leading car makers of this country as to the stand they propose to take in the matter of contests. Fifty-seven replies were received and while few of them were positive in their statements, still the general tenor of the letters was such as to encourage promoters in general, provided they read between the lines.

Some of the Gossip

It has been gossiped around that the rejuvenated United Motors intends to support contests liberally; that Hudson and Chalmers will race again and that several other big concerns are ready to come into the game, but the Motor Age probe failed to produce any definite results. It did find out, though, that there are many makers who are giving the question careful thought and it would not be surprising if at show time several converts were announced. It is known that Stutz, Mercer and Mason will continue in the sport; Studebaker undoubtedly will be in, although its plans have not been completed; Hudson is reported to be thinking it over; Lozier would like to see what its little six can do; National is uncertain; Marmon is thinking it over, while recruits are announced in the shape of the Ames and G. J. C. Motor Co., of White Plains, N. Y. The Speedwell and Staver also will race, it is expected.

As for the annual A. A. A. reliability, it looks as if that famous event would be restored to its old prestige next year. It is to be held in June and the American Automobile Association will make every effort to secure a record-breaking entry list.

A Chicago-Boston Reliability

Then, too, there is a prospect of a reliability from Chicago to Boston via New York, which will be remarkable because the cars will be required to run night and day continuously and with the motors running at all times. Drivers and observers will be changed each night and morning. All details have not been completed, though.

Manufacturers in Reply to Queries as to Contest Plans for the Season of 1913

accrues from contests on good speedways like Indianapolis and Atlanta. We are in favor of and expect to support reliability runs but not hill-climbs in 1913. We rather prefer stock car contests with the usual technical examination. Our racing plans will not be decided until after January 1.—Alfred Reeves, general sales manager.

Ford Motor Co.—We hardly believe the Ford company will take part in any contests of any sort during the ensuing year. We are not building racing cars and are not in favor of supporting contests of this sort, consequently we have made no plans either in the way of building special machines or arranging to take any part in racing contests.—N. A. Hawkins, commercial manager.

Matheson Automobile Co.—We will not support racing directly, but if occasion warrants it we will give assistance or support to responsible, legitimate agents who have made good.—W. C. Shepard, president and general manager.

Mitchell-Lewis Motor Co.—We are not contemplating the taking up of either road or track racing, but there is no doubt but what some of our representatives will do something in this line.—O. C. Friend, sales department.

Edwards Motor Car Co.—We have not fully formulated our plans but it is our impression that we will support reliability runs and hill-climbing contests in 1913.—F. B. Ludwig, sales and advertising manager.

Pierce-Arrow Motor Car Co.—We are not interested in contests and do not intend to support them. However, if we were called upon to express a preference we would declare in favor of stock car contests. When we say stock car contests, we mean stock car in every sense of the word. The only stock car contest that might interest us would be one where the cars were taken directly from stock and put back in stock after the event.—C. L. Hodge.

Empire Automobile Co.—Although this company will not indulge in any sort of racing, it is very probable that we will enter in the Pacific coast tour of the Indiana manufacturers and we also will be in other non-contest events.—Harlow Hyde, advertising manager.

Simplex Automobile Co.—We do not contemplate racing next year but we will continue to have our special track car driven by Louis Disbrow.—C. A. Brosiel, manager.

Inter-State Automobile Co.—We have discontinued racing, temporarily at least. We take an interest in the sport but cannot state positively as to when we will participate in any event.—C. P. Brockway, factory manager.

Cameron Mfg. Co.—It is our intention to support racing next season. We have no preference as to the style of the contest if the weight of the car and the piston displacement are held to reasonable safe limits. We are very much in favor of hill-climbs and fuel economy contests, believing they are the best tests of all-round efficiency of a car. We favor stock cars for hill-climbs and fuel tests and non-stock for speed events.

Cole Motor Car Co.—The Cole Motor Car Co. believes in every enterprise which displays the use and merit of the motor car. It believes in racing, in hill-climbs, reliability runs and all contests whether national or local. On these occasions when the Cole Motor Car Co. has not been able to participate, it has been glad that there were others at hand to help stir up the interest of the public in the motor car industry. This is the feeling of the Cole company. It is a little early to pin ourselves down to anything that we shall do specifically, for it is the policy of the company to decide on each specific event as it comes up rather than make a general statement as to what contests it will support.—Carl Bernhardt, assistant advertising director.

Buick Motor Co.—We have made good in the game and we can see nothing to gain by a continuance of support of contests, but we really feel that events of any public nature are, in a measure, the backbone of the motor industry. However, while we as manufacturers give contests our loyal moral support, we are not in them for ourselves, nor have we any desire to be. As to reliability runs, etc., our dealers all over the country are always pulling them off and we are mighty glad to see them do it.—Charles H. Woodruff, director of publicity.

Columbus Buggy Co.—We do not intend to make any plans toward participating in any of the racing events next year, although we may build a few cars for racing and furnish these to our dealers if they request them.—W. C. Leslie.

Moline Automobile Co.—We positively are not interested in racing events of any character whatsoever. The only class of contest in which we are interested is the reliability which is run under grade 1 rules, which call for stock cars and a technical examination.—W. H. Van Dervoort, president.

Letters were received from the following firms which declare positively they will not support contests in 1913: Knox Automobile Co., Cadillac Motor Car Co., White Co., Willys-Overland Co., Packard Motor Car Co., Olds Motor Works, Franklin Automobile Co., Dorris Motor Car Co., Haynes Automobile Co., Norwalk Motor Car Co., Zimmerman Mfg. Co., Westcott Motor Car Co., Dispatch Motor Car Co., Auburn Automobile Co., Great Western Automobile Co., Peninsular Motor Co., George W. Davis Carriage Co., Bartholomew Co., Anger Engineering Co., Wayne Works, W. H. McIntyre Co., Regal Motor Car Co., Chevrolet Motor Co., Apperson Brothers Automobile Co., Abbott Motor Co. and R. M. Owen & Co.

Massachusetts Judges Hold Motorist

BOSTON, Mass., Nov. 27—The supreme court of Massachusetts presented to the 40,000 or more motorists in the Bay state yesterday a Thanksgiving decision for which they will not be very joyful, when it was decided, four judges to three, that a motorist passing a street car on the right was not obeying the law of the road, and therefore was liable for damages for injuries to anyone he may hit, regardless of other circumstances.

Judges Braley, Sheldon, Morton and De Courcey backed up the decision, while Chief Justice Rugg and Judges Hammond and Loring wrote a dissenting opinion. However, as the majority rule settles the matter, it means that motorists throughout the Bay state, and particularly while driving in cities—and also drivers of other

Decision of Supreme Court Clashes with Bay State Rules of the Road

vehicles—will find themselves in a fine pickle from now on until the legislature grants them relief. If they do not follow the law of the road and drive to the left when overtaking any vehicle, electric cars included, they will be disobeying the law. The various cities of Massachusetts which have traffic regulations requiring all vehicles to keep to the right, and to pass electric cars on the right, can now throw their regulations into the waste basket, for they are not worth the paper on which they were written. Meanwhile, when motorists obey the law and follow the rule of the road they may find themselves running the risk of head-on collisions with vehicles coming the other way. Otherwise they must stick to the beaten path of travel and not go faster than the electric cars.

Already Boston is in the throes of bewilderment over it. The Boston street commissioners point to an act of the legislature giving them power to make traffic regulations in the city, and under their ruling vehicles must keep to the right, regardless of the state law. Now these commissioners intend to stand pat on the matter and the police commissioner, Stephen O'Meara, says that he will follow the ruling laid down by the commission.

On the other hand some attorneys say that the act conferring on the Boston

Majority Opinion of the Bay State Supreme Court

THE scene of the accident was a public way in the centre of which the double tracks of a street railway were so located as to leave an equal space between the outer rails and the opposite curb. The plaintiff had just alighted from the right hand side of an open electric car, and while in the act of stepping forward to cross the street to the curb in front, the defendant's motor car, which had been following in the rear, turned to the right to pass the car and in passing struck and injured him. If the defendant had gone by on the left the plaintiff would not have been injured, and in submitting to the jury the question of the defendant's negligence the presiding judge was requested by the plaintiff to rule that "the fact that the defendant was disobeying the law of the road will justify the jury in finding for the plaintiff, if the plaintiff was in the exercise of due care." Damon v. Scituate, 119 Mass. 66, 69. Finnegan v. Winslow Skate Mfg. Co. 189 Mass. 580, 582.

The verdict having been for the defendant, the exceptions are to the refusal to give this request, and to the instructions that the defendant's conduct "was not a violation of the 'law of the road,' and was not of itself negligence." A majority of the court are of opinion that the request was appropriate, and that the instructions were erroneous. By R. L. c. 54, s. 2, "the driver of a carriage or other vehicle passing a carriage or other vehicle travelling in the same direction shall drive to the left of the middle of the travelled part of a bridge or way; and if it is of sufficient width for the two vehicles to pass, the driver of the leading one shall not wilfully obstruct the other."

It has been decided that in the concurrent use of our public ways a motor car is to be classed as a vehicle. Hennessey v. Taylor, 189 Mass. 583. Trombley v. Stevens-Duryea Co. 206 Mass. 516. Lynch v. Fisk Rubber Co. 209 Mass. 16. Bourne v. Whitman, 209 Mass. 155. But the defendant contends that an electric street car should not thus be defined, and if it is not a vehicle as an object of travel, his liability at common law depended upon whether he acted with reasonable prudence in passing upon the right instead of on the left, and the jury correctly settled this issue in his favor. Smith v. Conway, 121 Mass. 216, 219.

It was assumed in Clinton v. Revere, 195 Mass. 151, 154, where the plaintiff riding a bicycle and following an electric car and furniture wagon moving abreast, turned to the right to pass between the car and the wagon and was injured by a defect in the way, that his failure "to observe the requirements of R. L. c. 54, s. 2, by turning and passing by to the left of the car," was not decisive, as the jury were to determine whether he acted with ordinary care.

And in McGourty v. De Marco, 200 Mass. 57, 60, where the plaintiff in alighting from a street car was run into from behind by a team owned by the defendant and driven by his son, it was said: "If the defendant was, as his counsel assumed in their brief, and as the jury certainly might find, attempting to pass the car from behind on his right hand in violation of R. L. c. 54, s. 2, the jury might find that this, under the circumstances, was negligence on the driver's part such as McGourty was not called upon to anticipate." See also Keeney v. Springfield St. Ry., 210 Mass. 44, 48. A further examination of the statute in the light of our decisions confirms this construction. The relative rights of the general public to use the highway through which a street railway runs were defined some fifty years ago by Chief Justice Shaw in Com. v. Temple, 14 Gray, 69, 75, as being equal, "in the absence of any special regulation by law."

In constructing the statute of 1856, c. 302, s. 5, which made the wilful and malicious obstruction of the use of the track of the street railway of the company incorporated by the statute a criminal offence, he further says, in considering the exceptions of the defendant who had been convicted of a violation of the act by obstructing a horse car when travelling over the street with a heavily loaded team: "The defendant's team was moving at the usual rate for teams of that class, but at a less rate of speed than the cars were in the habit of moving. There was room outside the track for either vehicle to pass the other. When the car came up, the conductor asked the defendant if he would remove his team from the track; he did not, but continued upon it, at the same rate of speed, several hundred feet, and then turned off. Several things are here to be observed. The cars could only pass on one precise line. The wagon could deviate to the right or to the left, within the limits of the travelled part of the road. The public, by the grant of the franchise, had granted the right to move on that precise line, and had given to all passengers the right to be carried on that line at the usual rate of speed at which passengers are carried by horses, subject only to occasional necessary impediments. The cars cannot so move, and the passengers cannot be so carried, whilst the wagon moves on the track. No impediment is shown to prevent the wagon from turning out. The wagon therefore was for the time being an unnecessary obstruction of the public travel, and therefore unlawful."

While the motive power has been changed, no departure has been made from the principles of this decision, which have been affirmed whenever in the concurrent use of our public ways by other travellers and street cars it has been necessary to refer to their respective rights. Driscoll v. West End Street Railway, 159 Mass. 142, 156. Benjamin v. Holyoke Street Railway, 160 Mass. 3, 5. O'Brien v. Blue Hill Street Ry., 186 Mass. 446, 447. Kerr v. Boston Elevated Railway, 188 Mass. 434, 435, 436. Callahan v. Boston Elevated Railway, 205 Mass. 422, 423.

A vehicle is a means of conveyance, and the term has not been restricted to horse drawn carriages, but includes bicycles, motor cycles, motor cars, or a street car, which since the leading case is assumed to be a vehicle having no paramount right, when being operated, to inconvenience other travellers except in so far as the legislature has granted an exception to street railway companies.

Said Holmes, J. in White v. Worcester Cons. Street Railway, 167 Mass. 43, 44, 45, "Their tracks are in the highway, where all vehicles have a right, not simply to cross, but to travel. In view of the inability of the cars to leave their tracks, it is the duty of free vehicles not too obstruct them unnecessarily, and to turn to one side when they meet them, but subject to that and to the respective powers of the two, a car and a wagon owe reciprocal duties to use reasonable care on each side to avoid a collision."

See Galbraith v. West End Street Railway, 165 Mass. 572, 580. "Neither has a right to assume that the other will keep out of the way at its peril, although the electric car has a right to demand that the wagon shall not obstruct it by unreasonable delay upon the track." O'Brien v. Blue Hill Street Railway, 186 Mass. 446. Williamson v. Worcester Cons. Street Railway, 191 Mass. 144. Stubbs v. Boston & Northern Street Railway, 183 Mass. 513. Chaput v. Haverhill, Georgetown & Danvers Street Railway, 194 Mass. 218. Jeddrey v. Boston and Northern Street Railway 198 Mass. 232. Lockwood v. Boston Elevated Railway, 200 Mass. 537. Eldredge v. Boston Elevated Railway, 203 Mass. 582. O'Brien v. Lexington and Boston Street Railway, 205 Mass. 182. Hatch v. Boston and Northern Street Railway, 205 Mass. 510. Carroll v. Boston Elevated Railway, 205 Mass. 519, 520. Eustis v. Boston Elevated Railway, 205 Mass. 143.

See also Burton v. Nicholson, 1909 1 K. B. 397, where the court held that the driver of a carriage overtaking a tram car must observe the law of the road. The right of the plaintiff as a pedestrian to free and unobstructed passage also has not been abridged by modern conditions of travel. "There is no law or principle of law, or of reason, which confines foot-passengers to particular crossings. Such a restriction would be very inconvenient and annoying. The street should be kept in such condition, that foot-passengers may be able to cross, with a reasonable degree of safety, using proper care themselves, at any and all places.

The necessity of this might be illustrated very fully by reference to the common and ordinary course of business. A person, who is left by an omnibus in the middle of the street, should be able to go in safety to the sidewalk, at the nearest point, and not be compelled to make his way among the carriages in the middle of the street, until he can reach a place particularly set apart and designated for the purpose of crossing." Fletcher, J. in Raymond v. Lowell, 6 Cush. 530, 531. Slayton v. West End Street Railway, 174 Mass. 55 Eustis v. Boston Elevated Railway, 206 Mass. 143, 144. Mullen v. Boston Elevated Railway, 209 Mass. 79, 80, and cases cited. Berry v. Newton and Boston Street Railway, 209 Mass. 100.

The statute in question has not provided merely for the protection of travellers in vehicles; pedestrians also are entitled to rely upon the presumption that it will be observed. Brown v. Thayer, 212 Mass. 392. It should receive a construction not only in harmony with what has been declared to be the reciprocal rights and duties of travellers as defined by the authorities cited, but which will not create an exception where none is necessary to effectuate the legislative intention. The law of the road first appears in the statutes of 1820, c. 65. It was not, however, until the general statutes, c. 77, that s. 2, now R. L. c. 54, s. 2, was enacted, and s. 5, that "the provisions of this chapter shall not apply to horse railroads" was also added. Re-enactment followed in the public statutes, c. 93. In the last revision s. 5 is omitted.

The reason given by the commissioners is that it is superfluous, as "the history and subject matter of this chapter show that it has no application to railways, whether operated by animal power or electricity." Commissioners' report on public statutes Part I, p. 491.

If the acceptance and adoption of the report without change is decisive, that no express repeal of the existing law was intended, yet the legislature must be understood to have acted under the well recognized rule that if a statute which previously has received judicial construction is codified with the purpose of not making any substantial change in the law, it will be presumed that the intention was to adopt the construction given by this court even if there may be changes in phraseology. R. L. c. 226, s. 2. Com. v. Lancaster Mills, 212 Mass. 315. Paszkowski v. Stony Brook Paper Co. 210 Mass. 86. Wright v. Dresser, 140 Mass. 147, 149. Bent v. Hubbardston, 138 Mass. 99, 100. Shelton v. Sears, 187 Mass. 455. If therefore s. 5 of c. 93 of the public statutes, being merely declaratory of the law of the road as defined by this court, is to be treated as still in force, how far does it affect the preceding sections of the R. L. c. 54?

The first two sections are commands addressed to the drivers of carriages and other vehicles on a road or bridge. By s. 1 every

Cannot Pass Street Car on the Right

Attempt to Be Made to Have Legislature Change the Measure

street commission the right to make traffic laws does not abrogate the state law of the road because it does not state so specifically. Therefore, any motorist who gets into trouble may find that the decision of the supreme court will not exempt him because it happens in Boston, for if this were so the court would refer to the regulations in its decision.

Boston is referred to as an example in the opinion handed down, which seems to preclude that it should enjoy any special favors. Even if the traffic regulations in Boston overrule the state law that will not be of any help to Worcester, Springfield, Fall River or any one of the other thirty-odd cities of the state, not to mention the countless large-sized towns where electric cars occupy the main-traveled roads. So the motorists wonder where they are at in Boston, whether to take the street commissioners' view and depend upon not getting into trouble, or take the court view of the case. The insurance companies will take the matter up now because they have to pay the damages in most of the accident cases.

This whole matter came about through a motor accident in which Thomas P. Curtis, a wealthy motorist, figured some time ago. He was proceeding through Revere when J. Sidney Foster stepped off a street car on the right. According to Curtis, Foster swung wide, and although there was 5 or 6 feet between the electric car and his motor car Foster bumped into the mud guard and wheel. Curtis was driving slowly, not more than 5 miles an hour, and he blew his horn.

When the case for damages was tried Foster's attorneys asked Judge Harris, who presided, to instruct the jury that the fact that Curtis was disobeying the law of the road would justify the jury in finding for Foster if the latter was in the exercise of due care. Judge Harris refused to do so, and in his charge to the jury he said that the ordinary rule of the road does not apply to street cars, because they cannot go to the right or left, but must keep straight on or back up along the rails. He also stated that

such driver is required to drive his vehicle reasonably "to the right of the middle of the travelled part of such bridge or way," and by s. 2, if passing a vehicle going in the same direction, he is required "to drive to the left of the middle of the travelled part." Where vehicles are moving in the same direction over a roadway sufficiently wide for them to pass abreast, the statute is silent as to any duty of the vehicle ahead, except that "the driver of the leading team shall not wilfully obstruct the other." The comprehensive words of these sections should be given their ordinary and natural significance. R. L. c. 8, s. 4, cl. 3.

Although street cars are vehicles within the meaning of the statute, their drivers are relieved from the requirement of turning to either side of the middle of the travelled part of the road. The reason is obvious. The cars need not turn, because they cannot diverge from the tracks on which they run. Persons lawfully using a public way have a right to presume that drivers of free teams and vehicles will act in conformity with these directions, and if a driver neglects to obey them, and injury results, this is a circumstance which the jury may consider in determining whether he was careless, and unless explained it is indicative of his negligence. Besides, if the exemption applicable to street cars were held to include the defendant, the practical results would be serious. Street railways are not chartered and granted locations in our public ways for the benefit of the promoters or owners. "The accommodation of travelers, of all who have occasion to use them, at certain rates of fare, is the leading object and public benefit, for which these special modes of using the highways are granted, and not the profit of the proprietors."

It is common knowledge that passengers generally leave street cars from the right hand side, whether the cars run on single or double tracks, which in cities and large villages usually are located in the center of thoroughfares where travel is most frequent. And if the drivers of other vehicles are required to observe a street car as being within the law of the road, passengers in alighting will be freed from the needless hazard of personal injuries from the undue proximity of vehicles passing in either direction.

The not infrequent condition requiring a prudent driver, if the tracks are double, to ascertain whether a car is approaching on the parallel track before turning his vehicle upon it, is but incidental to ordinary travel in streets in which cars are being operated. If an oncoming team were moving over the same area, he would be required to use similar precautions to avoid a collision, or even if necessary, to wait for it to pass. It may be suggested that in some country roads and village streets, or perhaps in cities, tracks are located at the extreme edge of the highway, where of necessity passengers alight from the left hand side, and the inconvenience of drivers of vehicles who wish to pass may be increased, and the safety of pedestrians correspondingly imperiled. The requirement, however, is only that the passing vehicle shall "drive to the left of the middle of the traveled part of the way," and, as we have pointed out, where the jury find the circumstances to be such that in the exercise of reasonable care the statute could not be literally obeyed, no inference of negligence can be drawn.

If under modern conditions of travel in our congested streets there is danger in requiring the driver of a carriage or other vehicle passing another carriage or vehicle traveling in the same direction to "drive to the left of the middle of the traveled part of the way," as is intimated in the dissenting opinion, yet we cannot disregard the express requirement of the statute; it is for the legislature to provide a remedy. Execptions sustained.

Massachusetts Court Renders Dissenting Opinion

THE chief justice and Justices Hammond and Loring express their dissent from the opinion of the court which will arise from it. The only question involved is whether, under R. L. c. 54, s. 2, the driver of a motor or horse-drawn vehicle overtaking and passing an electric car going in the same direction must leave it on his left. That question has never been decided by this court. In Burton v. Nicholson, 1909, 1 K. B. 397, the law under consideration was different in its language and history from our statute, and the court there felt compelled to hold that other vehicles passing tram cars must observe as to them the law of the road, although recognizing that so construed it was almost impossible "to be obeyed in a reasonable manner in practice." Within less than four months after that decision the order was annulled by the legislative body. See statutory rules and orders for 1909, p. 497.

A penal statute ought not to be interpreted so that it cannot be reasonably obeyed, or so that it will require further legislation to make it workable, unless no other course is open. We think it is plain that it was not the intent of the legislature to include electric cars or horse cars within the law of the road, and for these reasons:

1. It is shown by the history of the statute. The first statute as to the use of the road by travelers in carriages and other vehicles was St. 1820, c. 65. This act contained regulations as to travelers meeting upon the highway, but none as to travelers going in the same direction passing one another. It was embodied in substance in revised statutes, c. 51, without change. When the general statutes were enacted section 2, now under consideration, appeared for the first time, and another section, numbered 5, was added stating expressly that the provisions of the chapter should not aply to horse railroads. Gen. Sts. c. 77.

The reason for this undoubtedly was that the first statutes authorizing the construction of horse railroads were passed in 1853, and a considerable number had been passed before 1860. Gen. Sts. c. 77, appears substantially without change in Pub. Sts. c. 93. The commissioners for consolidating and arranging the public statutes, in their report of 1901, append to c. 54 a note to the effect that they have omitted s. 5 "as superfluous. The history and subject-matter of this chapter show that it has no application to railways whether operated by animal power or by electricity."

The law of the road as reported by the commissioners was adopted without change by the legislature, which means that the report and note were approved. Hence the purpose of the legislature in omitting from the law of the road in the revised laws the express exemption of horse cars and by necessary implication of electric cars, which had been in the two immediately preceding compilations of the statute law, was not to change in any respect the law as it had been for more than forty years. The primary significance of the exemption of horse railroads in Gen. Sts. c. 77, and in Pub. Sts. c. 93, is that the drivers of the cars of horse and electric railways are not bound to observe the law of the road. An equally necessary conclusion, however, is that such cars are not to be regarded as carriages or vehicles by other travelers. To say that the statute "shall not apply to" such cars is equivalent to saying that they are not "carriages" and "other vehicles" within the meaning of those words in the statute. They are extempted from the section touching the passing of one carriage or vehicle by another going in the same direction as much as from the section concerning those which meet going in opposite directions. They are excepted out of the statutory provisions both as objects and subjects of travel.

2. There are in the commonwealth many miles of electric railways constructed upon the side of highways. It is impossible to treat the law of the road as applicable to cars upon tracks so laid. The legislature cannot have intended to make the law of the road applicable in case of cars when it is impossible to obey it in these not infrequent instances where tracks are laid on the side of public ways.

3. The traveling public almost universally, according to our observation, has construed the statute in practice as not applying to street cars. When a statute regulating the daily conduct of thousands of people has received an interpretation by substantially universal custom, it ought not to be set aside unless strongly required.

4. The public construction of the meaning of the statute secures a far larger degree of safety than any other interpretation. There is no danger to any traveler in the careful passing by any vehicle to the right of an electric car going in the same direction, while there is or may be great peril in passing to the left, from behind the obstruction to sight and hearing, which an electric car usually is into the face of other traffic. The passenger alighting from the street car, either on the right or left side, is protected by the general requirement of due care from other travelers.

5. It is wellnigh impossible to obey the statute interpreted in any other way. Heavily-loaded vehicles on congested streets must be almost constantly violating the law (see Bryant v. Boston Elevated Railway, 212 Mass), or else cause great and unnecessary congestion of traffic. Many car tracks are laid in the center of roads where there is not room for two motor cars or carriages to pass on one side of the tracks. To require an overtaking motor car or carriage to drive to the left from behind an electric car into motor cars or carriages going in the opposite direction to say the least introduces confusion into travel, which may result in imminent hazard of injury.

6. The traveler alighting from the right side of a street car will be sujected under the other interpretation to the danger of vehicles approaching from a direction opposite to that in which the car is moving, while those alighting from either side must be prepared to avoid them coming from a direction to which they have been unaccustomed. The question is not whether the driver of a motor car should stop before passing a stationary car. That situation is not covered by the law of the road nor by this decision. It is governed by the general rules of negligence.

7. The other rule finds support in the provisions of R. L. c. 54, s. 2, which if construed literally requires one vehicle passing another to do the very thing which has been shown to be inherently dangerous, namely, to go to the left of the middle of the way; that is to say, into that part of the way appropriated to traffic going in the opposite direction. In the crowded streets of cities not only is this not the rule observed in practice, but passing vehicles are never allowed in the left of the middle of the way, even if they cannot otherwise pass those in front of them. Whether this section should or should not be construed to apply to those ways only when there is only room for two vehicles abreast it ought not to be decisive of the question under discussion. We think the ruling requested was refused rightly.

the rule of the road applied to other vehicles, and really meant to prevent anyone driving from behind and seeking to pass some one ahead, from being pocketed by reason of the forward driver turning to the right at the same time. In other words, the electric car, not being able to swing off its rails, it could not pocket any one coming from behind and so cause injuries to the following vehicles.

The attorneys for Foster took an exception to this charge to the jury, and the case was sent to the supreme court on that issue. So the judges have been pondering over it for some time and now the decision has been announced, which comes as a surprise.

Already there has been much comment aroused in Boston over it, but as yet the police commissioner, the Boston street commissioners and the highway commission refuse to make any comment until they study the decision. Moreover, comment must be guarded for it is the decision of the supreme court. There seems to be nothing left to do except wait for the legislature to meet next spring, and already motor organizations are preparing to have amendments made to the law of the road exempting electric cars. This will simplify the matter, for the court holds to the opinion that law is law and it must be obeyed. So the judge's opinion that Curtis did not violate the law in going to the right has been overruled and the exceptions sustained. The law of the road which is the cause of all the trouble now is found in two sections of the revised laws. The first one dates away back to 1820 and when the statutes were codified it was divided as follows:

Section 1—When persons meet on a bridge or way, traveling with carriages, wagons, carts, sleds, sleighs, bicycles or other vehicles, each shall reasonably drive his carriage or other vehicle to the right of the middle of the traveled part of such bridge or way, so that their respective carriages or other vehicles may pass without interference.

Section 2—The driver of a carriage or other vehicle passing a carriage or other vehicle, traveling in the same general direction shall drive to the left of the middle of the traveled part of a bridge or way; and if it is of sufficient width for the two vehicles to pass, the driver of the leading one shall not obstruct the other.

Then there is the acts of 1908, chapter 512 which reads as follows:

Section 1—Whenever on any bridge or way, public or private, there is not an unobstructed view of the road for at least 100 yards, the driver of every vehicle shall keep his vehicle on the right of the middle of the traveled part of the bridge or way, whenever it is safe and practicable so to do.

MARYLAND CLUB ELECTION

Baltimore, Md., Nov. 30—At the annual meeting of the Automobile Club of Maryland recently Dr. H. M. Rowe was re-elected president and the other officers were also re-elected as follows: Asa B. Gardiner, Jr., vice-president; H. M. Luzius, secretary, and Thomas G. Young, treasurer. Board of governors in addition to officers include James S. Reese, Joel G. Nassauer, Joseph M. Zamoiski, John S. Bridges and R. Milton Norris. During the year the club has taken in 305 new members and has posted 650 new road signs.

Grand Rapids Proud of Its Big Show

Thirty Thousand Persons Attend Exhibition and Reports Tell of Sale of 250 Cars—Many Wholesale Contracts Closed —Eighty Different Lines of Vehicles Displayed

GRAND RAPIDS, Mich., Nov. 30—With an attendance record of 30,000 people marked up to its credit during its 4 days and 5 evenings run, Grand Rapids fourth annual show ended most happily tonight.

In interest, attendance, value and variety of exhibits, and in everything but number of sales direct to ultimate consumers the show far eclipsed its three local predecessors. Upwards of eighty lines in 140-odd models, all represented by local dealers, were shown on the floors of the exhibit space, while everything in the line of accessories was shown, beside all motor cycles sold in this market.

Thanksgiving day and Friday brought out the greatest crowds, that of the holiday being a sightseeing audience. Friday's and Saturday's were the bargain seeking and buying assemblages. Incomplete reports tonight indicate that between 250 and 300 pleasure cars were sold outright to new owners, compared with between 400 and 500 at last year's show in February. The wholesale contracts closed with sub-agents was the most gratfying feature from the distributors' viewpoints, the early dates enabling them to practically close with dealers throughout all their territory.

Every grade and type of car obtainable in any market was included in the exhibition, as well as a comprehensive exhibit of commercial cars, from light delivery wagons to 5-ton trucks. The trade in this department was not extensive, most of the exhibitors contenting themselves with listing prospects, although to a man they expressed themselves as highly satisfied.

The buying trend noticeable seemed heavily to the medium and higher grades of cars. The Cadillac and Rambler lines, strongly represented, did heavy business. Several sales of $5,000 cars were effected these including Packards, Kissels and Whites. The Overland company exhibit, including every model of that line, the Marmon, Federal truck and Standard electrics, was turned over to the sub-agents of that company, twenty-four of whom were in almost constant attendance.

QUAKERS SEEK SHOW BUILDING

Philadelphia, Pa., Nov. 30—With Philadelphia's annual exhibition now only a matter of 2 months away, the question as to where it is to be held is up for discussion and final disposition again, but if a proposition now being advocated is carried to satisfactory conclusion the solution of this yearly problem will have been found, probably for all time.

This proposition is to hold next January's event in the newly-constructed garage of the Automobile Club of Philadelphia, Twenty-third and Market streets, where a combined floor space of 90,000 square feet would afford ample room to accommodate all the exhibits without crowding, and thus eliminate the necessity of conducting practically two shows simultaneously in two widely-separated buildings as has been the rule.

It is becoming apparent that even the two armories will not be sufficient for space allotments for cars and accessories if all the would-be exhibitors are not to be restricted as to size of space. As three floors of the Automobile Club of Philadelphia's building are completed and in use, with a combined area of more than 90,000 square feet and the floor space of the First Regiment armory and the Third Regiment armory only aggregates two-thirds of that amount, the proposition that the club and the Automobile Trade Association co-operate and use the former's building is receiving favorable consideration.

The board of governors of the Automobile Club of Philadelphia has sent to the nearly 1,600 members a blank soliciting expressions of their views on the subject of leasing the building for the period required, accompanied by a statement by Powell Evans, president, urging support of the movement.

SHOW ROW IN WASHINGTON

Washington, D. C., Dec. 2—A row has arisen in the motor car ranks over the proposed show. Last week T. Oliver Probey, president of the Michigan Motor Co. and the Probey Carriage Co., announced there would be a motor car show at Convention hall during the week beginning February 3, with himself as chairman. Taking the ground that they had not been consulted in the matter, the dealers composing the Washington Automobile Dealers' Association, former promoters of the annual show, held a meeting and adopted a resolution to the effect that a 1913 show was inadvisable because of the lack of a suitable place in which to hold it, the members being of the opinion that Convention hall was unsafe and inadequate to accommodate those who might wish to exhibit, and pledging themselves not to exhibit in any show held during 1913. The dealers at this meeting decided it would be better to have a carnival week February 10-15 instead of a show. Undaunted by the action of the dealers' association, Chairman Probey announced his intention of having a show anyway.

Annual Show Problem Worries French

Proposition Being Considered to Alternate, Having Pleasure Car Exhibitions One Year and a Display of Commercial Motor Vehicles the Next—Spain and Russia in Line

PARIS, Nov. 22—With the salon about to open, French manufacturers are considering whether they shall make the event annual or hold it every 2 years. Four years ago it was believed that a show could be dispensed with, but the experiment soon showed that business was lost and that the London trade was securing a commercial advantage by the absention of Paris.

It therefore was decided to hold the show every 2 years, but a certain number of the members of the trade have not ceased to clamor for an annual event. There is a growing feeling that if the pleasure car show is held every 2 years, a big commercial vehicle show should be held on alternate years. This would give 1 year for the present pleasure car show, and the following year for the commercial exhibits, both displays being in the Grand Palais.

The Chambre Syndicale de l'Automobile, one of the three trade associations jointly responsible for the Paris salon, has already passed a vote in favor of the alternation of pleasure and commercial vehicle shows. It is thus likely that next year the Grand Palais will be occupied exclusively by motor trucks and kindred vehicles.

The coming show, to be opened on the morning of December 7 by President Fallières, promises to be one of the most successful ever held in France. Although the Grand Palais is the biggest hall in Paris, every inch of space has been let and about 200 applicants have been unable to get in. This has caused the creation of an independent overflow section in the Jardin de Paris, a famous Parisian pleasure garden usually closed at this time of the year. The overflow section is being held independently of the manufacturers' show, but is being officially supported by the city authorities.

Barcelona will hold a show from March 8 to April 2, this being the first public motor exhibition held in Spain. St. Petersburg has decided to hold its fourth annual show during the month of May, 1913. The exhibition will deal with both pleasure cars and commercial vehicles. The French manufacturers taking part are Brasier, La Buire, Delahaye, Delaunay-Belleville, Lorraine-Dietrich, Mors, Panhard-Levassor, Peugeot, Renault, Rochet-Schneider, Labourdette, Kellner, and Bergougnan.

STRIKE THREATENED IN AKRON

Akron, O., Dec. 2—Following a cut of 20 per cent in the wages of tire makers, an effort is being made to start a strike among Goodrich employes for higher wages it is said. The cut in the Goodrich was made about a week ago, and officers of the company stated that on account of improved machinery 20 per cent more work could be done, figuring on the theory that the tiremakers who do piece work will not suffer.

The International Workers of the World have been sending agents to Akron for more than a year to stir up a strike and they are in charge of the present movement. A stormy meeting of the tiremakers was held here Saturday night but nothing was definitely decided on. The strike should it be inaugurated would effect only Goodrich employes at first, although the other companies would likely be effected later on.

NEW IDEA IN STREET CLEANING

Indianapolis, Ind., Dec. 2—An informal bid has been received by the board of public works from the Furnas Pneumatic Sweeper Co., to clean the improved streets of the city for $100,000 a year. The offer, if accepted, would mean a saving of from $30,000 to $50,000 a year, compared with what the city is now paying with its own equipment.

The company manufactures a motor pneumatic sweeper which, it is said, will do the work of several horse-drawn sweepers. It is located in this city and has experimented with the sweeper in New York and other cities.

It is proposed by the company to use the motor sweeper 8 months each year, from April to December, the city to fix a schedule of sweepings similar to that now in force. From December to April the company would clean the streets according to the orders of the board, using during this period the apparatus now owned by the city, which the company proposes to take over at a fair appraised value.

FRENCH CAR CENSUS

Paris, Nov. 23—France possesses 76,771 private-owned cars having paid taxes during the year 1912. The figures show an increase in the number of cars during the year to the extent of 12,562. These figures are generally accepted as an estimate of the number of cars in use in France, but they are, in reality, of a very conservative nature.

Manufacturers' test and demonstration models, taxicabs, commercial vehicles of all kinds, foreign cars brought in temporarily, and all motor cycles, are exempt from direct taxation and consequently are not included in the returns. It is probable that the total number of motor vehicles in use in France is about 100,000.

The record for any one department is held by the Seine, which includes the city of Paris, where there are 13,389 privately-owned cars, the increase being 2,025 since last year. The next departments in importance are Seine et Oise, Seine Inferieure, and the Nord. The low-water mark is held by Corsica, with only nineteen cars, compared with twenty-one last year. It is the only district having reduced its number. Mountainous Lozere possesses but fifty-four cars, the Hautes-Alpes have sixty-four cars, and the Basses-Alpes 106. The average horsepower of the cars in the whole of France, on the French basis of estimating power, is 13; and for the Paris district the average horsepower is 16. The official figures for the last 6 years are as follows:

1907.....	31,286	1910.....	53,669
1908.....	37,586	1911.....	42,609
1909.....	44,769	1912.....	76,771

FRENCH REPORTS ON EXPORTS

Paris, Nov. 23—For the first 10 months of the present year France exported cars to the value of $34,709,280, compared with $26,443,800 for the corresponding period of the preceding year. Increased business was done with all nations with the exception of five—Italy, Turkey, Russia, Austria, and Switzerland. Great Britain still heads the list as the best customer of France with $9,537,600 worth of business for the 10 months, compared with $8,591,880 for the first 10 months of 1911. The next on the list is Belgium, with nearly $8,000,000.

There is a considerable increase in the number of cars sent to America, the values being $857,820, compared with $474,120 for the previous year. On the other hand, American imports have jumped to the extent of $340,000. The total value of foreign cars brought into France is $2,245,800. America is responsible for practically the whole of the increased imports. The official returns for the export of motor cars from France for the first 10 months of 1912 are as follows:

Country—	1911	1912
Great Britain.....	$ 8,591,880	$ 8,591,880
Belgium	4,981,980	7,966,140
Algeria	1,906,980	3,052,980
Germany	2,204,040	2,698,560
Argentine	1,345,680	2,314,600
Brazil	972,900	1,716,960
United States.....	474,120	857,820
Spain	501,000	808,560
Switzerland	922,620	769,020
Italy	760,320	445,140
Russia	449,880	382,840
Austria	380,880	174,780
Turkey	284,400	120,660
Other countries.....	2,611,180	3,861,600
	$26,443,800	$34,709,280

CHICAGO CLUB ELECTION

Chicago, Dec. 3—The annual election of the Chicago Motor Club, which took place tonight, resulted in a victory for the regular ticket, N. H. Van Sicklen, Sr., defeating F. E. Edwards for the presidency, 295 to 205. The new set of officers consists of the following: President, N. H. Van Sicklen, Sr.; first vice-president, Henry Bosch; second vice-president, Thomas J. Hay; treasurer, A. M. Cobb; secretary, W. E. Stalnaker; directors, L. A. Watts, E. G. Westlake, W. D. Foreman, W. J. Zucker and W. J. Boone; auditing committee, F. L. Eskey, R. G. Melcher and J. F. Meyer.

Creditors Discuss Flanders' Affairs

DETROIT, MICH., Nov. 30—A statement of the affairs of the Flanders Mfg. Co., Pontiac, Mich., was heard by the merchandise creditors, representing 70 per cent of the total indebtedness of the concern, at a meeting held at the Pontchartrain. A committee of three was appointed to devise ways and means of continuing the business.

This committee, which was composed of G. W. Rogers, Goodyear Tire and Rubber Co., Akron, O.; S. T. Douglass, attorney for several of the largest stockholders, and W. S. Thomas, Wagner Electric Mfg. Co., St. Louis, represented the largest creditors, and was instructed to report to a committee of seven, composed of creditors next in order of magnitude. The latter was to act as an advisory committee to confer with the directors.

The Flanders Mfg. Co. has a merchandise indebtedness of $500,000 and outstanding notes to the amount of $350,000, totaling $850,000 assets, including the electric vehicle plant. The motor cycle factory and other holdings of the company amount to $2,135,000. The company's financial difficulties are all through lack of working capital and the indebtedness, only $40,000, of which is held by concerns having credits under $2,000 evidently can be squared away in the event of the closing out of the business. Many of the creditors, however, are of the opinion that by raising about $200,000 it will be able to profitably escape from its difficulties.

The electric car plant always has been a money-maker and the other holdings have been responsible for the present lack of working capital.

A notice of the creditors' committee proceeding was sent to every creditor, together with a forbearance agreement which they were requested to sign, thereby agreeing to waive the enforcement of their claims for a period of 90 days, unless, in the opinion of the committee, earlier action was deemed advisable. To date about 150 creditors out of the 500, besides the principal ten, have signed this agreement, which extends to the committee full and exclusive authority to act for the signers. The committee now has control of the majority of the credits and can act with authority when conferring with the directors.

ROAD BUILDERS MEET

Cincinnati, O., Dec. 2—The ninth annual convention of the American Road Builders' Association and the third American Road Congress will be held here at Music Hall, starting Tuesday and running to Friday. The program which has been mapped out is an extensive one. A special feature of the convention will be a big entertainment given in honor of the visitors at the Business Men's Club on December 4.

Inquiry Shows Manufacturing Company Needs More Capital

It is expected that there will be an attendance of between 1,500 and 2,000 at this affair.

Nelson P. Lewis, president of the American Road Builders' Association and also chief engineer of the board of estimate and apportionment of New York City, will call the convention to order Tuesday morning at 11 o'clock. Following the adjournment of the first session, President Lewis, Harold Parker, head of the good roads' movement in Massachusetts, and Secretary Powers, of the Road Builders' Association, will be the guests of the chamber of commerce at the regular noon-day meeting at the Sinton hotel.

An interesting display of the convention this year will be that of road building machinery. Many reservations for space have been made by machinery and material dealers.

NEW REPUBLIC OFFICERS

Youngstown, O., Dec. 2—At the directors' meeting of the Republic Rubber Co. on November 27 the following elections were made: L. T. Petersen was chosen first vice-president, succeeding L. J. Lomasney, deceased; John H. Kelly was chosen second vice-president and director, succeeding L. T. Petersen as second vice-president; A. H. Harris was chosen a director of the company, filling the remaining vacancy on the board. In addition to his work as general sales manager, Mr. Kelly, as second vice-president, will cooperate with the president and other officers, above mentioned, in general matters of management.

GENERAL VEHICLE REINCORPORATES

New York, Dec. 3—Changing the form of its business organization and enlarging its capitalization, the General Vehicle Co. has been reincorporated under New York laws for $10,000,000, divided evenly between preferred and common stock. The company always has been more or less of a close corporation and its character will not be changed by the new move. The present stockholders will be offered the option of taking the new issue, or as much of it as shall be issued at par. The present capitalization is $1,000,000.

The reasons for the increase are that the company requires more liquid capital to finance its plans for the immediate future. These plans include the installation of a huge factory for the manufacture of Mercedes trucks and also another large factory for the making of electric vehicles. The foundation of the new six-story building at Long Island is completed. The General Vehicle Co. has been ultra- conservative until recently, when it branched out into the gasoline field. It has been tentatively announced that there will be some additions to the present line of electrics and possible some changes in the roster of officers.

BUYS PART OF W. C. & P. PROPERTY

New York, Dec. 3—Leaseholds on the property occupied by Wyckoff, Church & Partridge, Inc., at Fifty-sixth street and Broadway, including the garage and supply store, have been sold by order of the United States district court to H. M. Swetland, for the Swetland Operating Co. It is understood that negotiations are under way to transfer the property to a garage and selling concern, or to an operating company.

On Saturday the transfer of the property to the purchasing syndicate consisting of Messrs. Ellis, Griswold and Dickinson was completed. The syndicate acted as intermediary between the receiver and the Swetland Operating Co. as the leasehold involved was a part of the bankrupt estate included in the terms of purchase.

No further developments as to the new corporation to succeed W. C. P. have been reported and announcement has been made that, while the preliminaries are finished, no outline of its scope and plans will be made until next week.

TRIES OUT NATURAL GAS

Pittsburgh, Pa., Dec. 2.—F. P. Peterson, of the Bessemer Gas Engine Co., in a recent issue of a paper of that company, made statements that are of interest to motor car makers and users. He said that it is entirely feasible to drive motor cars and, in particular, motor trucks, on natural gas. This, he said, can be done economically, as has been proven by actual tests. He says that 1,000 cubic feet of natural gas is worth, in fuel value, to 50 pounds, of 8 gallons, of gasoline.

Steel bottles, such as are used in the transportation of liquid carbonic dioxide are employed and the gas is compressed in them to a pressure of 100 atmospheres, by which method considerably more than 100 cubic feet can be carried in a single bulk. Two bottles are carried on a small car and the radius of action seems to be equivalent to that available from 2½ gallons of gasoline. When gas is obtainable at such a cost as at present, it is said that the saving would be considerable.

The scheme is particularly adaptable to motor trucks, Mr. Peterson says, as these machines have a decreased radius of action and can call at central replenishing stations for exchange of fuel bottles without any trouble.

Northway Buys Ohio Company Plant

CINCINNATI, O., Dec. 3—The assets and property of the Ohio Motor Car Co., of Carthage O., declared insolvent a month ago, will be taken over by the Northway Motor Co. The Northway company was recently incorporated in West Virginia with a capital of $600,000. It intended to build a factory here. After several conferences with the chamber of commerce, bringing together the contending factions in the litigation over the plant of the Ohio company, it was decided to make a bid to Receiver Edward Schultz. The lump bid was $65,000, which Judge Wade Cushing, of the common pleas court, ordered to be accepted.

William Padlioie, of Hartwell, O., is connected with Northway. They agreed to pay down $5,000 to bind the sale and to give $25,000 mortgage on the plant, and $30,000 additional cash when the sale is ordered. Several creditors of the defaulting company were petitioning for the sale of the concern under bankruptcy proceedings, but the chamber of commerce industrial committee got them together and it was called off.

The plant controls 10 acres of ground, about 3 acres of which is now under buildings. The new company will increase accommodations. It will manufacture motors, the main part of its industry, and at the same time continue to produce the Ohio car.

Mr. Northway states that the new company will start just as soon as court matters are settled. He is the president of the concern. Between 200 and 300 men will be employed. Charles F. Pratt was president of the old company, which has gone into bankruptcy on two occasions.

NEW CLUB FOR NEW YORK

New York, Dec. 3—Plans for organizing the motor men of New York into a club along broader lines than the Automobile Club of America are making progress. The first call was made October 1 by E. E. Schwarzkopf and since that time 122 names have been added to the list of founder members. Those who have identified themselves with the movement include leading dealers, officers of the national organizations and members of the motor and accessory trades.

The preliminary list shows that the new club, which will be called the Automobile Club of New York, is to be an association of the motor industry. Sidney S. Meyers has been named counselor.

The objects of the club, as announced in its prospectus, are as follows: To provide a social club in the neighborhood of Columbus circle; to stimulate public interest in the motor car; to cultivate closer relations between the trade and the users; to secure the advantages of co-operation

Virginia Concern to Take Over Factory of Cincinnati Car Maker

and to provide a center of information and advice.

According to the first bulletin sent out by the club, temporary quarters have been secured and several propositions looking to the location of the club near Columbus circle have been received. A meeting of the founders will be called in the near future to take up the matter of permanent organization and the election of officers.

BRIGHT SUCCEEDS HESS

Philadelphia, Pa., Dec. 3—Fred E. Bright has taken active control of the Hess-Bright Mfg. Co., which has been purchased outright by the Deutsche Waffen und Munitions Fabriken, or D. W. F., succeeding Henry Hess as president. Mr. Bright formerly was vice president and treasurer of the Hess-Bright company. Mr. Bright has been identified with Mr. Hess since the founding of the company, and as early as 1890 he manufactured ball-bearings of other forms. He also was associate inventor and designer of a linotype in 1893.

TRAFFIC TROUBLE IN CINCINNATI

Cincinnati, O., Dec. 2—Cincinnati is having more trouble with its traffic laws than any other city in the states right now. It seems that about four or five city executives do not work in perfect harmony in drafting new rules, with the result that one day a law is made, the next day it is changed and the next it may be wiped out altogether.

The most recent discussion was entered into over the rule prohibiting cars staying on certain streets in congested districts without an attendant. The merchants in these busy sections immediately arose in arms, protesting that it would hurt their business. Chief of Police Copelan declared that it would lessen the danger in case of fire, or any other accident, and that this rule would have to stand. The protest entered by the merchants was so strong, however, that the city council decided to allow a vehicle to stand 5 minutes without an attendant. The managers of the big stores then claimed that 5 minutes was not enough for a woman to do her shopping in. The thing was taken up again and now Safety Director Cash has issued an order changing the time limit to 10 minutes which unattended machines can stand in congested districts.

Electric cars which, it has been found, are used by many women on their shopping tours, will be allowed to stand unattended 30 minutes. The congested district covers busy Fourth avenue, where all the large retailing stores are located. The new ruling has caused many interesting discussions. Some storekeepers have provided men to drive cars to parking spaces on Eighth avenue and then have them returned when the customer is through shopping. One councilman has an idea that it would be better to cut out the esplanade on Fifth avenue and utilize it for parking space. However, this will hardly be done, as it would take any one of the scenic spots of Cincinnati.

DOCTORS ORGANIZE CLUB

Wilmington, Del., Nov. 30—In order to take advantage of an exemption in the Delaware motor law, which permits physicians on emergency calls to exceed the speed limit, and also to band together so as to buy motor car supplies in pool, at wholesale rates, thirty Delaware physicians, nearly all residents of Wilmington, have organized the Physicians' Motor Club of Delaware, the following officers having been elected for the ensuing year: President, Dr. J. Paul Lukens; vice-president, Dr. Willard Springer; secretary, Dr. Albert Robin; treasurer, Dr. Edgar Q. Bullock; board of directors, Dr. Henry R. Spruance, Dr. H. R. Pennock and Dr. H. W. Briggs.

The formation of a club would not be necessary to take advantage of the speed law exemption, but by forming such an organization it was possible to adopt an emblematic tag which shows that the owner of the car is a physician and is sufficient explanation to an officer who divines that a car is going too fast. The tag is placed near the license tag. It is about 3 inches in diameter, with a blue circle on the outside, containing the name of the club, and a red cross inside the circle.

THANKSGIVING DAY CLIMB

Evansville, Ind., Nov. 30—Walter Helmick, in a Pope-Hartford, won the Courier cup in the Thanksgiving day climb on Stringtown hill, defeating a Cole, Stanley, Ames and Thomas. The Ford won the 230 and under event and the Cadillac the other event. Three events were contested. Coming on a holiday, there was a large crowd out. Summary:

UNDER 230 INCHES

Car	Driver	Time
Ford	Zumstein	:51⅕
Flanders	McNeely	:52½
Buick	Schlensker	:56½
Regal	Lahr	1:04

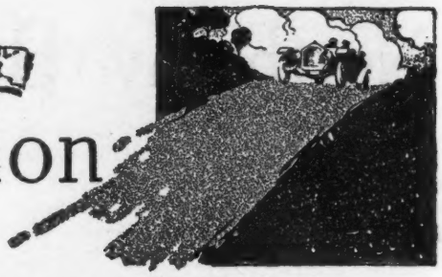
OVER 230 INCHES

Cadillac	Songer	:48
American	Scherflius	:48½
Pullman	Muller	:49
Cole	Allen	:49½
Cadillac	Geissler	:55

FREE-FOR-ALL

Pope-Hartford	Helmuck	:36⅖
Cole	French	:42½
Stanley	Rothrock	:44
Ames	Jones	:52½
Thomas	Miedreich	1:03½

Routes and Touring Information



FAMOUS HIGH BRIDGE IN KENTUCKY, HIGHEST IN THE UNITED STATES

OLD FASHIONED KENTUCKY HOME

Nine Days of Rest

By G. E. Robbins

FOUR congenial souls, lovers of nature and outdoor life, filled through and and through with good red blood, left Chillicothe, O., July 25, 5 a. m., bound for the Mammoth caves of Kentucky. C. M. Haynes, driving a Marion car, was at the wheel, and by his side sat Dr. R. W. Holmes, treasurer for the trip, who handled all the funds, directed the party to the hotels, paid all bills and smoked most of the cigars. The rear seat was occupied by F. C. Kirkendall, who gave dignity to the venture, and kept us posted on the historical features of the many places visited, and Dr. G. E. Robbins, the soloist of the quartet. Although the other three protested against so much song at first, on the latter part of our touring they either learned to sing or they sang in self defense, for many an evening mile we made the hills and valleys ring with our joyous music.

Out west through the fertile Paint valley our Marion hummed for 19 miles, when we reached Bainbridge, a busy little village, close to the Highland county line and near the famous Bainbridge caves. These caves are visited by many tourists every year and they are well worth coming to see. Fairly good hotels are conveniently located to care for all.

Through Paint Valley

Leaving Bainbridge and the Paint valley we wound around the Highland county hills and on over a splendid road into Hillsboro, 38 miles from Chillicothe; then on to the south over a fairly decent road to Ripley, passing on the way hills that rise almost to the dignity of mountains, but on whose sides were growing splendid corn, tobacco and other crops.

From Ripley we hurried to Aberdeen, reaching there just in time to catch the ferry-boat, so we were soon over the Ohio, muddy and high at that time, and on to Maysville, Ky., where we stopped for lunch and a little gasoline; a forenoon's ride of pleasure and enjoyment, every minute of the 83.4 miles.

From Maysville, up, up we rode until the scenery was widened in magnificent expanse, the Ohio river being seen for many miles, and we stopped the car hundreds of feet above the river level to feast our eyes upon the gorgeous panorama before us. But we hastened on, Lexington had to be reached for our first night out, and over fine improved roads, round and round we went, curve and curve and compound curve, horn blowing and whistles shrieking to warn the coming travelers. We enjoyed the turns in the road for we were alert to see what new beauty would

come into view with each turn, stopping occasionally to drink in some exceptional attraction, then gliding along over roads as smooth as a floor, on into Paris. Here we stopped just long enough to lay in a supply of chewing gum and a little face cream, for by that time our tender faces were beginning to feel the effect of sun, dust and a constant pressure of air.

Entering the Blue Grass Country

From Paris to Lexington we saw our first Blue Grass country, world-wide known and famous for beauty and chivalry; 18 miles of beautiful farms; elegant and refined homes, located back from the road far enough to be free from any travel annoyances, surrounded by magnificent walnut and elm; beautiful drives bordered by shrubbery and flowers, just enough to add to the delight of it all. No wonder those old mansions developed men of serious thought, and sober, honorable characteristics. The quiet home gave them opportunity for just such reflection that is needed to develop manly character.

Lexington was reached 2 hours before sun-down. "On to Richmond," was the cry bright and early next morning and after a good breakfast we whisked out into more Blue Grass country, passing through Richmond, Lancaster, Danville, Harrodsburg and Shakertown, stopping at High Bridge, one of the scenic beauties of the Kentucky river and one of the most interesting points we visited. The High Bridge is not the only point of beauty and interest in this part of Kentucky. The approach to Brooklyn bridge, coming down the long winding slope into the canyon—for canyon it really is—the precipitous cliffs of limestone and shale, the winding ribbon of river at the bottom and looking on and up we see our road miles ahead leading out of the valley, furnishing a scene never to be forgotten. And not without interest is the toll bridge crossing the river. The Scotch-Irish lady who took our fare was not without humor either, for when our treasurer understood the toll to be 5 cents, when it should have been 40, her eyes sparkled and with a sharp tongue she asked if we were all deaf, and then lifted the gate and started us on our way with a sally of wit appreciated by all and such as only her nationality can use.

Our route then led to Versailles, stopping on the way at the famous Alexander farm and driving over a part of the beautiful estate shaded by the largest walnut trees we have ever seen anywhere; then to Frankfort, the capital of the state. Nothing of especial beauty or interest is there except the Capitol building, which is a splendid piece of architectural beauty, a credit to the state.

From Frankfort to Louisville are 53.6 miles of fine road through a beautiful rolling country. Lunching at Louisville, we soon rolled away to the south, reaching Bardstown, 12.6 miles, in record time. Up to this point we had been blessed with fine roads, but now we were to experience riding over the old Louisville and Nashville pike, or rather, the remains of a road that had been built more than 50 years ago and never repaired to any extent. Here Mr. Haynes ran his car for more than 40 miles over awful roads, through Sand hollow, up hill and down, the greater part of the time on low speed, and never murmured; the car partaking of the driver's spirit never missed an explosion. We reached Buffalo early enough to run out to the Lincoln farm, the shrine of every true American, and felt proud to know that the Lincoln cabin is protected by a magnificent granite building that will stand for ages. The grounds around the building are being beautified gradually, but the old spring remains just as it has been for many years.

Pike Road in Frightful Shape

From Buffalo our course took us to Horse cave, where we had a fine chicken supper, prepared after 7 o'clock by a good woman who seemed proud to serve us, even after regular hours, with good things to eat. An early start from here soon put us over more bad road. We reached Mammoth cave about 10:30 and visited the underground cavern in company with a hundred or so other excursionists, when after eating a poor lunch, we motored on south to Bowling Green and thence to Nashville, Tenn.

All along this route we found the people filled with enthusiasm over the project of the great highway being built from Nashville to Louisville going by the Lincoln farm, and to be known as the Lincoln way. Once completed such a road will open up a gateway between the north and south that will attract motorists from far and wide.

Really the most interesting part of this day's journey was in our experience with the people on our way. As we stopped at some small village the natives would gather about our car, full of curiosity, and in the most candid way converse with us freely on any subject. When we inquired about other towns only a dozen miles away we were surprised to find not more than one or two out of a score of men and boys had ever visited their neighboring village. Through this region we saw the Kentuckians' finest horses, but the fine horses proved to be fine mules. And they were fine, too; great big, strong sleek animals and every one fearfully afraid of an auto, all but one. A short turn in the road brought into view a man in an open buggy driving a big old mule, and not having time to get over on his side of the road he slyly winked at our party and sang out at the top of his voice, "Get up there, Sal, doggone your old hide"; evidently blaming the old mule for his predicament. But "old Sal" was onto her job and seemed to understand the humor of the situation and plodded on, never changing her gait a particle.

Nashville is a beautiful and thriving city, but we enjoyed the Hermitage more than we did the city. Jackson's home and burial spot is well worth visiting. It is a beautiful old mansion filled with pictures, furniture, bric-a-brac and articles of the Jackson time.

ANDREW JACKSON'S STATE COACH

LINCOLN MEMORIAL, ONE OF THE TOURING ATTRACTIONS IN KENTUCKY

From Nashville we journeyed through Clarksville to Hopkinsville, the great tobacco town, where we tarried for the night, then on to Madisonville and Henderson, Ky., the next morning. Here we ferried the Ohio, passing through Evansville and stopping at Princeton, Ind., for the night. Next morning we ferried the White river and passed on to Vincennes, running over into Illinois then on to Indianapolis by way of Terre Haute.
in fewer quantities annually than 25, as

Here Mr. Haynes deemed it advisable to have his car looked over to see if the grueling it got on the rocky roads had in any way done damage. No serious trouble was found, but a few minor changes were gratuitously and cheerfully made. Such kindness and courtesy on the part of the makers was thoroughly appreciated by our party. From Indianapolis we sped to Cambridge City, whose main hostlery serves famous chicken dinners, which our party did not miss, and then to Richmond, Ind., for the night.. From Richmond our course was through Dayton and Xenia, O. From Xenia we started home, completing a 9-day trip not excelled in beauty anywhere. We traveled 1,170 miles in 9 days without a single serious annoyance, and driving the first 600 miles without adding a drop of water to the radiator or an ounce of oil to the engine.

Supplies Used

Upon leaving Nashville the radiator required less than a pint of water, and only 2 quarts of oil were added to the engine. No further addition of water or oil was made from Nashville to Indianapolis. Four punctures on the whole trip was a little variation that did not annoy us.

The whole trip was made on 97 gallons of gasoline, an average of 12.06 miles per gallon. The running time was 70 hours and 52 minutes, an average of 16½ miles per hour. Average daily run, 130 miles.

The weather was perfect and we rode with top down throughout the trip, never missing a ferry boat or a meal. All of us were strengthened in body and of one accord we join in saying that earth affords for us no finer recreation than this 9-day vacation.

Dodge City, Kas., to Phoenix, Ariz., the Borderland Trail

By C. H. Lester

MY first thought was to write the story of the finding of the route from Dodge City, Kans. to Phoenix, Ariz., now known as the Borderland route, but instead I will endeavor to make this article as helpful as space will permit to motorists who may wish to drive this way into the southwest.

On my way south recently I drove from Dodge City westerly to Santa Fe, Kans., then southerly to the Edmund ford across the Cimarron river. This section of the road I cannot recommend, but much prefer the original route as first traveled by me via Fowler to Plains and thence straight west to Edmund ford. This route is through a farmed district, with towns, garages, etc., and better roads, instead of through a ranch country. While the Cimarron is as noted as the Gila for treacherous sands, the Edmund ford is firm and hard with easy approaches. I have crossed this ford twice in November and in June of this year and have never found it to exceed 10 inches of water. Between the ford and Liberal is several miles of rather heavy sand, with a slight up-grade. From Liberal the route in a general way follows the Rock Island railroad through the Oklahoma panhandle to Hooker, Optima, Guyman, Goodwell and Texhoma. While this part of Oklahoma is fairly well settled there has not been much road work done, except to build bridges, and as the soil becomes very soft under heavy rains and bakes when drying, the road is somewhat rough afterward.

Location of Road

From Texhoma the road parallels the Rock Island to Stratford, Tex., where it leaves the railroad and goes nearly south through a ranch country to the little town of Dumas, thence south to Amarillo, crossing the Canadian river 20 miles north of Amarillo over a good bridge. The brakes on each side of the river have been improved by the building of a very good road during the past summer. From Dumas to the Canadian river signboards have been erected by the Dumas Drug Co.

From Amarillo the road continues south through Canyon, Happy, Tulia, Plainview, Abertheny and Lubbock where the railroad is left. From Texhoma to Lubbock the high level tableland of the Texas panhandle is traversed and the road penetrates deep into the south plains country or the Llano Esticado of the Spanish explorers. On this section one passes through a pleasing variety of ranch and agricultural lands; through several thriving modern little cities and over good roads. There is nothing of moment however, in a scenic way, to interest the tourist except the Paladora canon near Canyon. To me, however, the great irrigation development at Plainview was interesting.

Toll Road from Lubbock

Leaving Lubbock a fairly good exclusive motor car toll road—toll $1—extends southwest to Brownfield, Gomez, then Plains. East of Plains there is some sand, but not very bad, as it has been mostly removed from the road. Going northwest from Plains about 3 miles a high plateau country is passed through to Broncho, entering New Mexico to Tatum, Four Lakes ranch, noted locally for its weeping willows, and on west to Mescellero pass—the entrance to the Mescellero valley and its once noted and almost impassable barrier of sand dunes. From Plains, Tex. to Mescellero pass, the road is well traveled and passes over a high level gyp strewn plain but it is reasonably fast.

From Mescellero pass I continued westwardly to the sand dune district which is now bridged by a very good road of clay and calichie construction. Beyond this built-road the going is rather difficult in spots, because of short stretches of sand that are yet uncovered. For several miles just east of the Pecos valley, the gypsum cap rock, because of its varying hardness, has become pitted and rough under the heavy travel. Entering the Pecos valley a good graded road is found, but a barren district until after the river is crossed where one is greeted by a beautiful district of flowing wells, green alfalfa fields, large apple orchards, heavily tree lined avenues and Roswell, N. Mex. While far east of the Pecos valley, if the day is clear, the tourist may see in the far western distance the towering peak of El Capitan—the first view of a mountain thus far. Leaving Roswell over the Lincoln stage road 50 miles to Hondo, the motorist must be careful to take the road bearing north and just west of the state station, 21 miles out, going around the north side of Boundary hill. I have driven over this hill, but would caution any motorist against doing so, unless he is deliberately looking for trouble. Reaching Hondo I crossed the easy ford of the Rio Hondo where a concrete bridge is now being built, and proceeded up the narrow mountain-walled valley of Rio Ruidose, passing Glencoe. From the Ruidoso creek near here, the road bears more to the south and soon enters the Mescellero Apache Indian reservation, and in due time and over a beautiful easy mountain road, the summit of the pass over the White or Sacramento mountains is reached. Then by an easy descent Agency and Tularosa valley are reached and a good government road leads into Tularosa.

In New Mexico

Near the Agency and connected with it by a road is Cloudcroft—a place of great scenic beauty and the summer resort of the city of El Paso. Cloudcroft is also reached from Alamogordo by train, stage and motor car. The scenery on this mountain drive from Roswell west is quietly beautiful rather than rugged and grand, being a pleasing combination ot bare rock, wooded mountain-side, cultivated valley farms, and winding along at your side, flows the little mountain river. As the altitude of the Tularosa valley is much greater than that of the Hondo where the road enters it, the ascent is mostly on the east side of the summit with a 50-

mile long, fairly uniform grade, with no dangerous places whatever, if the ordinary caution that should always be used in a mountainous country and on unknown roads, is observed. Should one not wish to stop in Tularosa, upon reaching the Alamogordo signboards in the east part of town, a south turn can be made following the pike to Alamogordo which is usually a night control going either way.

I went southwest to the celebrated White sands skirting it for a short distance finally bearing more to the south over the mesa lying between the White and Organ mountains. This road is fairly good, with but little sand or rock and is signposted to El Paso. After a run of a little less than 100 miles the end of the mesa is reached and the grounds of important army post of Fort Bliss entered. At the signpost on the mesa marked "To Los Cruces" one may turn to the right, passing through Organ Pass and into the Mesilla valley, thence south from Los Cruces over the Camenso Real to Anthony and over the paved road to El Paso.

By way of Fort Bliss, El Paso, the metropolis of the southwest, can be seen lying in the valley of the Rio Grande below, while beyond the river may be seen C. Juarez in the land of Manana.

Equipment Necessary

Should one ask what equipment is necessary in making this trip, I would first emphasize the axiom of all experienced motorists which is to travel light. Leave or ship everything that can be discarded. Aside from the work or driving suit, one change suit with necessary under wear, overcoat, toilet articles, is all that is really needed. Any type of gasoline car in good condition will make the trip, as many have done so since I first drove over this route one year ago, and they have ranged in size from the powerful six cylinders to the baby Metz.

As to car equipment, unless an odd sized casing is used, one is enough with say two extra tubes, as casings and tubes can be bought at many places enroute. Secure a canvas desert water bag of 3 or 5 gallons capacity to carry water for drinking and radiator use. Gas and lubricating oil can be obtained at frequent intervals all along the route—even such points as Broncho, Tatum, Mescellero Pass, Picacho, Hono, Glencoe and Ruidoso carry these supplies. Water is to be found all along the route and so far as I know is all good, except that from the well in the courthouse grounds of Plains, Tex., which is strongly impregnated with gypsum. Carry a light hunter's axe, a short-handled sharp shovel, and the light rope, pin and hammer necessary in applying the windlass hitch to the car when stalled in mud or sand, or for a sharp bank or ditch the car cannot pull. Beside being light and portable, I consider this appliance of more value than all the blocks and tackle, canvas, etc., one could carry in a lumber wagon.

All through the range country ranch houses and stock wells are met frequently. The motorist should arrange the running schedule so as to stop over night at either Brownsfield or Plains, Tex., when going west, and at Alamogordo going either way, unless he wishes to do recklessly fast driving or be out at night. With the exception of the little postoffice points noted above as gas supply points, all the towns have hotels ranging from fair to good, restaurants, quick lunch counters, etc. In the south plains country the hotels use but one common table, but it is loaded with a bountiful and varied supply of nutritious, well-cooked food. Personally, I have found the beds restful and clean. When away from the railroad a telephone is usually near by. The people have always been courteous to me, and willing to give any information or reasonable assistance.

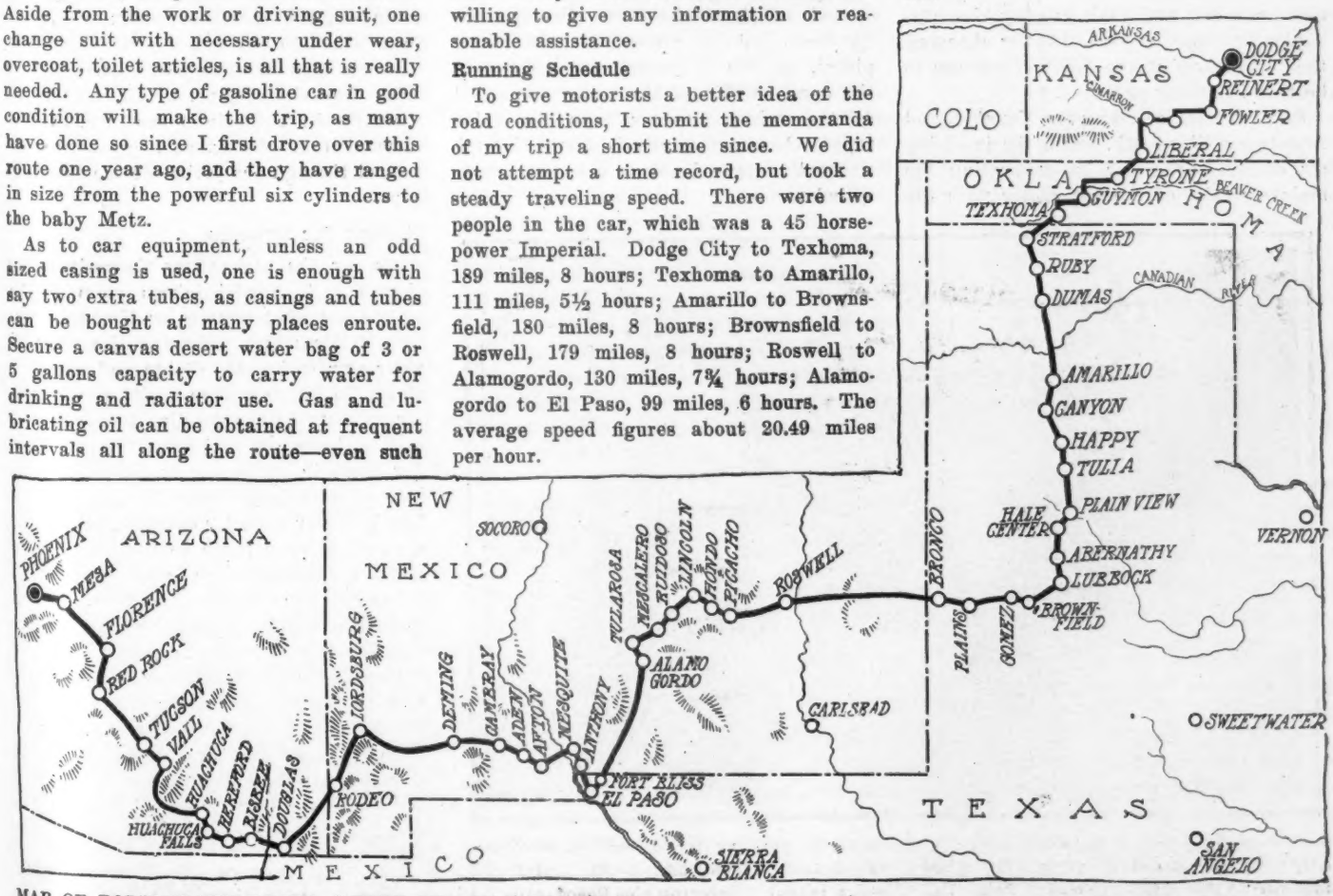
Running Schedule

To give motorists a better idea of the road conditions, I submit the memoranda of my trip a short time since. We did not attempt a time record, but took a steady traveling speed. There were two people in the car, which was a 45 horsepower Imperial. Dodge City to Texhoma, 189 miles, 8 hours; Texhoma to Amarillo, 111 miles, 5½ hours; Amarillo to Brownsfield, 180 miles, 8 hours; Brownsfield to Roswell, 179 miles, 8 hours; Roswell to Alamogordo, 130 miles, 7¾ hours; Alamogordo to El Paso, 99 miles, 6 hours. The average speed figures about 20.49 miles per hour.

I wish now to offer a few cautions for driving in the southwest. On mountainous grades don't kill your motor by pulling it too low on high gear—the intermediate and low gear are installed in cars for use when needed and not for ornamental purposes. Do not court possible disaster or an overstrained motor by trying to see how high your car can climb without shifting gears. Be sure your brakes are in good condition. If inexperienced in heavy mountain driving, such for instance as the drive through the Superstition mountains to the wonderful Roosevelt Dam in Arizona, the observance of these cautions may save your life and also lengthen that of the car.

Road Precautions

From Roswell west to the Pacific, much of the soil of both mesa and valley is of silt or adobe formation and when soaked by heavy rains or overflowed irrigation ditches, becomes very soft and mirey. On approaching such places be careful—usually the firmest footing is the beaten track. This same soil sometimes washes badly when a cloudburst occurs in the mountains and ditches or washes are cut across the road by the rush of the water onto the land below. These washes are often hard to see at any considerable distance so if you are running fast on an unknown road, keep a sharp look-out ahead and be prepared to apply the brakes quickly to prevent breaking springs or perhaps bending the main frame of the car.



MAP OF BORDERLAND ROUTE, S HORT CUT TO SANTA FE TRAIL

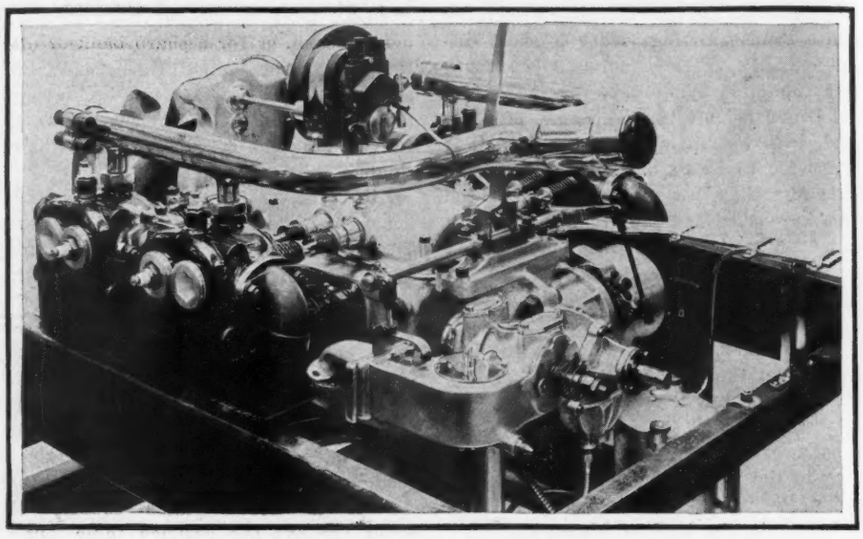
Courtesy Blue Book Publishing Co.

Analyzing the Foreigner at the Olympia

By George W. Gaidzik

While Lack of Standardization Is Apparent and Specialization in Manufacture of Parts Makes Medium-Sized Cars Expensive, Designers' Ingenuity Is Shown

LONDON, Nov. 23—No other motor car show in the world offered so much in the way of originality and ingenuity in motor car design and construction as did the great annual exhibition at Olympia. Lack of standardization and specialization in the manufacture of motor car parts in Europe makes the medium sized foreign car a more expensive proposition than the same class of American machine, but at the same time it has developed the ingenuity of the motor car engineer to a much higher degree than that of the average American engineer, with the result that his individuality is more strongly expressed in each foreign car. The Olympia exhibition, therefore, did not bring out such marked tendencies in design and construction as the great American shows; but there were among the vast number of improvements and refinements to be seen several noteworthy features common to many cars of different make.

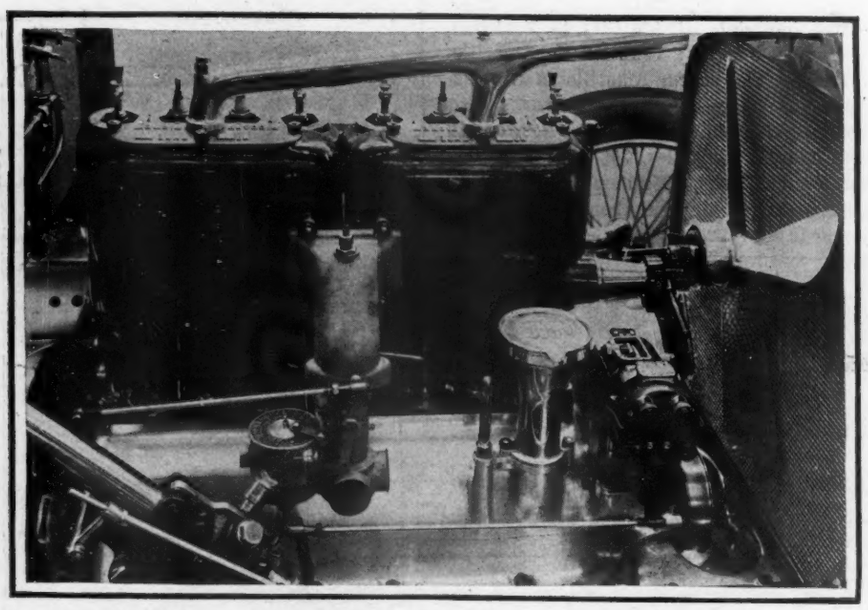


A FOUR-CYLINDER OPPOSED MOTOR DEVELOPED BY THE N. ENGINEERING CO., FOR WHICH PERFECT BALANCE IS CLAIMED. THE SINGLE LEVER SHOWN RETARDS SPARK, RELIEVES COMPRESSION AND ADJUSTS THROTTLE FOR STARTING ENGINE BY MEANS OF A LEVER AT THE SEAT

Carbureter Changes

In motors, for instance, nearly all makers have adopted improved facilities for heating the incoming air of the carbureter and provided convenient means of regulating the temperature thereof. Means of warming the mixing chamber of the carbureter and inlet manifold also are generally provided; and dash or otherwise conveniently placed adjustments for changing the proportions of the fuel mixture are to be found in many varieties.

Several cars, including the Vauxhall and Armstrong-Whitworth, warm the incoming air of the carbureter by connecting the main air inlet of the carbureter with the chamber formed by inclosing the valve springs and tappets, the air being admitted to these chambers through wire gauze-covered apertures in the cover plates. As the carbureter generally is on the opposite side of the motor from that of the valves, the air from the valve tappet chambers usually is drawn through a cored passage between the two center cylinders.



PICARD-PICTET MOTOR, SHOWING WATER-JACKETED INLET PIPE, CONVENIENT OIL FILLER AND GAUGE, AND LOCATION OF MAGNETO ON TRANSVERSE DRIVING SHAFT. THE CONNECTION AT THE TOP OF THE MANIFOLD IS FOR PRIMING. THE PAN IS MOUNTED ON A SWIVEL BRACKET FOR ADJUSTMENT OF BELT

For the purpose of warming the mixture of the carbureter while en route to the cylinders, the Sheffield-Simplex carbureter is attached to a jacketed pipe connection. The openings into this jacket communicate with the exhaust pipe, which is arranged directly above the inlet gas pipe, so that a portion of the exhaust gases are bypassed through the jacket of the inlet gas pipe.

Getting Air Pressure

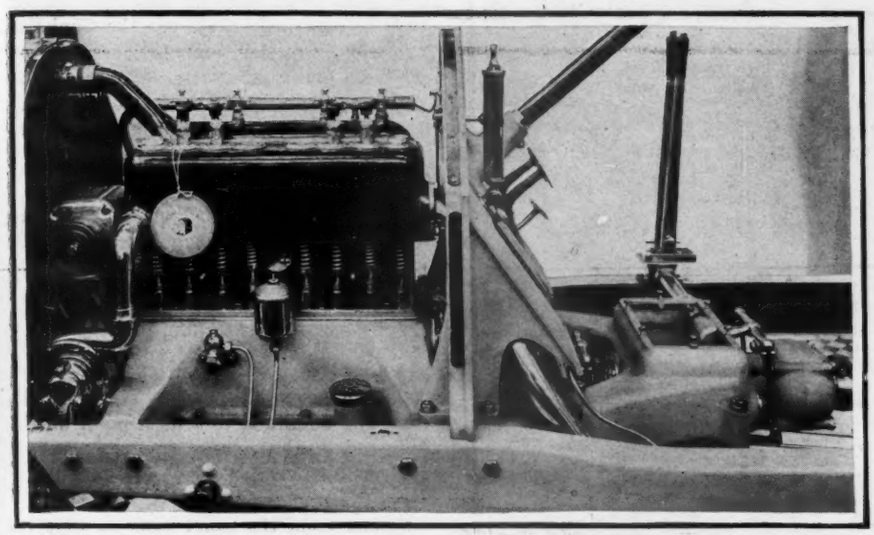
As for the carbureters themselves, the Zenith and Claudel-Hobson seem to be among the most popular on European motors, while many makers still adhere to their own carbureter design and construction. To insure a more positive supply of air pressure to the gasoline tanks, several makers have provided some form of plunger pump in preference to using the pressure of the exhaust gases for this purpose. The Wolseley cars, for example, have fitted a small plunger pump to the side of the motor crankcase which is operated by an eccentric cam on the camshaft. Many American cars have similar pumps for circulating the oil of the motor.

Practically all of the best European motors employing circulating oiling systems provide convenient devices for draining oil from the motor crankcase, and right beside or very near these devices are to be found the gauge for testing the oil level in the crankcase reservoir, and a large getatable filler opening.

The most popular type of oil gauge comprises a steel rod with graduations near

Latest Mechanical Ideas Discussed

Most European Makers Have Adopted Improved Facilities for Regulating Temperature of Air for Carbureter—Cooling Systems Described—Self-Starting Devices



SIMPLE LINES OF NAZARRO. UNIT GEARSET AND CRANKCASE, WITH CAST ALUMINUM FOOT-BOARD AND DASH BOLTED ON. LIGHTING DYNAMO DRIVE, CARBURETER, AND LOCATION OF OIL-BREATHER-FILLER ON CAR DESIGNED BY FORMER CHAMPION RACE DRIVER

the lower end of it, and a thumb screw at the upper end. The lower end extends down into the oil of the reservoir, and to ascertain the oil level, one has but to unscrew the thumb screw from a threaded hole in the casing, lift out the rod secured to it, and the amount of oil in the reservoir may be readily learned from the oil and the graduations on the end of the rod.

Finding Out Fuel Supply

A similar device could be very easily fitted for the purpose of ascertaining the amount of fuel in the gasoline tank, as many motorists now carry sticks or rulers under their seat cushions for this purpose. Unusually large oil filler funnels have been provided to facilitate the replenishment of the oil supply in the motor crankcases; the Spyker having even gone so far as to fit a long cast-aluminum extension tube to the lower portion of the crankcase, which extends outward from under the side member of the frame.

In the cooling systems of the European motor cars, there are to be found few thermo-syphon systems; but simplicity is a feature of those using pumps; for the pumps are very accessibly mounted; water manifolds are large, simple and direct; and the connections are substantial, but easy to loosen when required. Automatic and adjustable mechanisms for regulating the tension of fan belts are to be seen in many varieties; and the most popular type of belt is a leather linked type mounted between pulleys with V-shaped grooved faces.

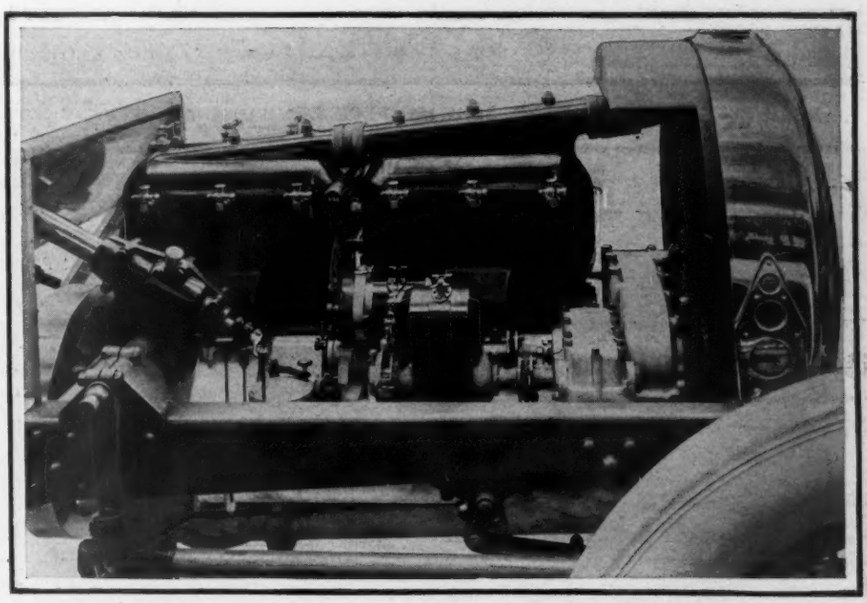
Some of the tension-maintaining devices may be very readily slacked off so that the fan may remain stationary while the motor is running, this is to facilitate warming up the motor on cold mornings. An innovation is to be found on the Wolseley cars in the form of a dirt trap in the lower water connection to the radiator; this consists of a Y-shaped pipe with the lower leg of the Y forming the trap and having a plug at the bottom of it for the purpose of cleaning it.

Many shapes and varieties of the wind-cutting, or sporting types of radiators are shown on the cars on exhibition at Olympia. But popular as these seem to be now, it is hardly probable that the style will become at all permanent, for the only advantage is the wind-cutting qualities, and as this slight advantage is only to be gained at excessibly high speeds it is not worth the extra cost and freakish appearance. However, there are many motorists who find a freakish style attractive. Considerable care is shown in the substantial and flexible means provided for the support of motor car radiators; but America can learn about all that there is in this line from their own manufacturers of commercial vehicles.

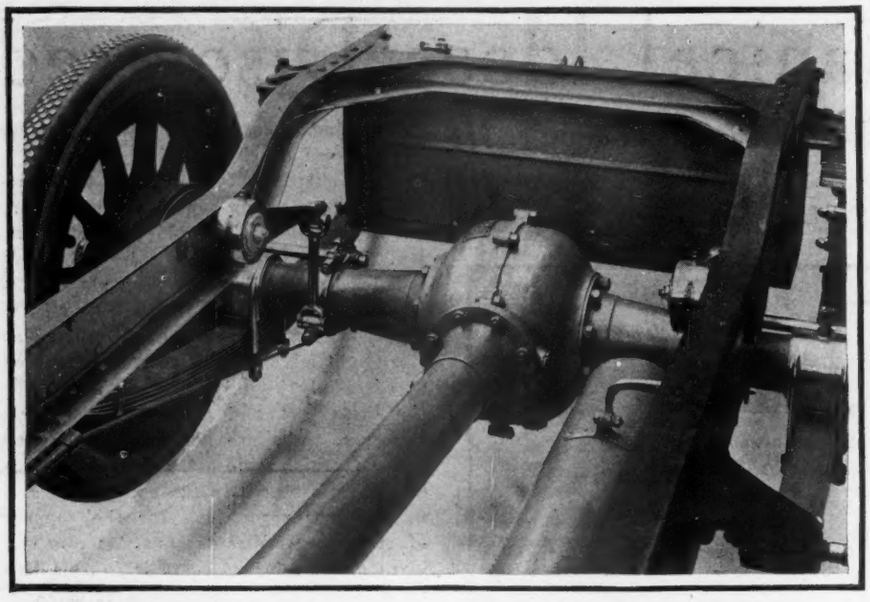
Casting of Cylinders

Practically all four-cylinder motors have their cylinders cast in block; while the six-cylinder motors usually are cast in pairs, but occasionally in threes. There are comparatively few high-powered cars on exhibition; and only a very small number of six-cylinder motors; the latest thing in sixes is the English Daimler Knight engine. Motors generally are smaller than American engines; and the cylinders are mounted on aluminum crankcases suspended at four points from subframes. Chain-driven engine gears are almost universally employed.

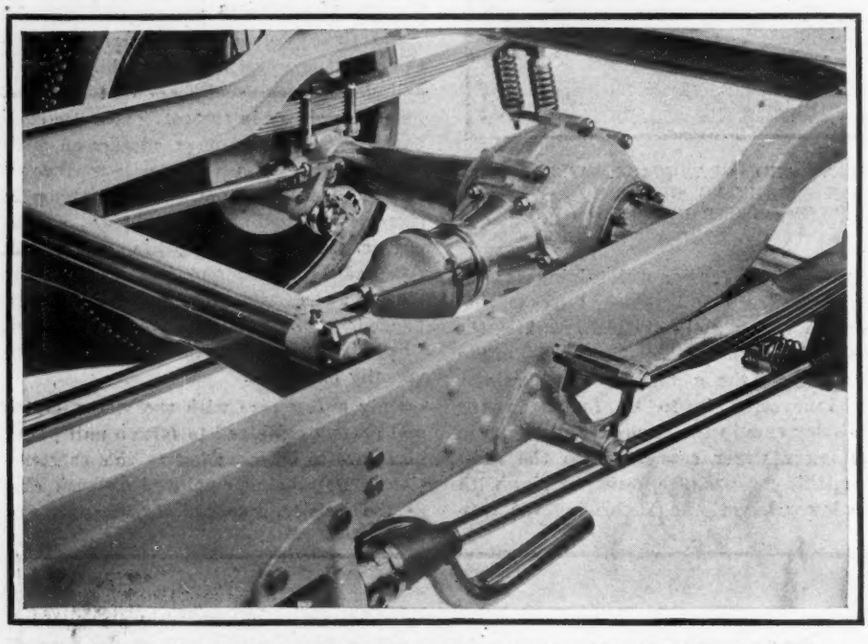
Only a few cars with the motor, clutch and gearset combined to form a unit power plant are to be seen; but as this construction is now being employed on such cars as the Belsize, Panhard, Lanchester, and



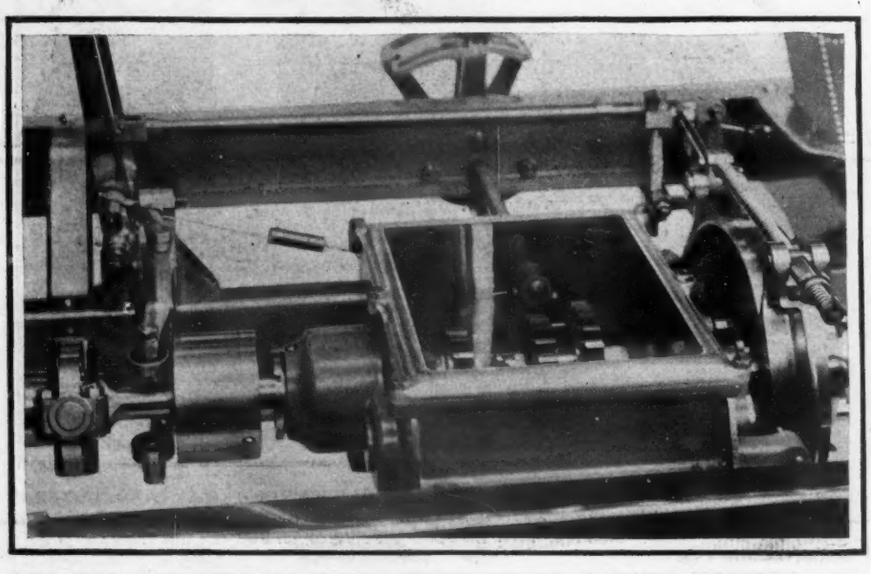
SIX-CYLINDER SHEFFIELD-SIMPLEX, SHOWING STEERING GEAR AND CONTROL LINKAGE AND TWIN LIGHTING AND IGNITION MAGNETOS. ALSO LEAF-SPRING RETAINER OF OIL FILLER. NOTICE THE LEATHER UNVERSAL JOINTS ON MAGNETO AND GENERATOR DRIVES



SHOWING UNIVERSAL JOINTS IN SHOCK-ABSORBER ON BERLIET



REAR SYSTEM OF DELAHAYE, SHOWING PECULIAR BRAKE ADJUSTMENT



VALVELESS DARRACQ—BALL-BEARING WHEEL CLUTCH THRUST

several other reputable makes, an increase in the popularity of this construction in Europe is manifest.

It is surprising to see how few of the European cars are equipped with self-starting devices. Last year's Olympia show marked the introduction of self-starters on the Cadillac and on two English cars, the Adams and S. C. A. T.; and this year there are but four new foreign cars so equipped; these are the Sunbeam, Wolseley, Crossley and Lanchester. All of these except the latter two are of the compressed air type; while electric dynamos are employed for starting and lighting on the Crosley and Lanchesters.

Adams System Described

The Adams system gets its compressed air from a plunger pump mounted at the forward end of the motor and operated by an eccentric and shaft off the end of the crankshaft. The air is stored in a tank placed inside of the chassis frame to the right of the propeller shaft. A push pedal on the dash releases air from the tank and admits it to a distributer on the rear end of the camshaft; and from this device it is carried to the engine cylinders. The Sunbeam air starter is quite different from the usual type in that instead of using a distributer and conducting the compressed air to the motor cylinders, a small vertical three-cylinder air motor is mounted alongside of the engine on the right which is geared to the flywheel like the electric motor of the Cadillac starting mechanism, gear teeth being cut in the face of the flywheel. A separate one-cylinder air compressor mounted on the gearbox also is used to compress the air.

The Wolseley system resembles the Adams described above, except that the air compressor is attached to the left front end of the transmission gearbox and driven off the countershaft thereof.

In the Crossley cars, the dynamotor is bolted direct to the engine crankcase, the armature shaft being rotated by a chain. Inclosed in a casing at the rear end of the dynamotor is a planetary gear, which gives a reduction of 20 to 1 for starting purposes. The dynamo is differentially wound for generating current, the shunt winding of the field magneto being excited off the batteries when the charging switch is closed. Current is taken from a set of batteries consisting of twelve cells and giving 24 volts.

Single-Lever Control

A single-control lever serves to apply a band brake to hold one of the members of the planetary gear still and to switch on the current. When the engine has started, the control lever is released, the band brake is freed, and the machine is connected as a dynamo, so that when the engine speed exceeds the armature speed, it becomes a generator of current for restoring the supply of current in the batteries. The batteries are coupled in four parallel groups of three cells each for lighting, and give a total capacity of 80 ampere hours at 6 volts.

The Lanchester electric lighting and starting outfit also employs a dynamotor suspended from about the center of the chassis frame to the right, and its armature shaft is brought into communication with the propeller shaft of the unit power plant by chain and sprockets. It is a Delco system like that of the Cadillac, and is not standard equipment as yet. The White and Cadillac were the only two American cars on exhibition equipped with self-starting mechanisms, and, of course, these also are of the electric dynamotor design.

Mounting Lighting Dynamos

A notable feature of car design evident in a number of the new models is the provisions for mounting and driving lighting dynamos. Improvements in car illuminating systems in general are much in evidence, which show that electric lighting, through its increased efficiency and all around convenience has gained considerably in favor.

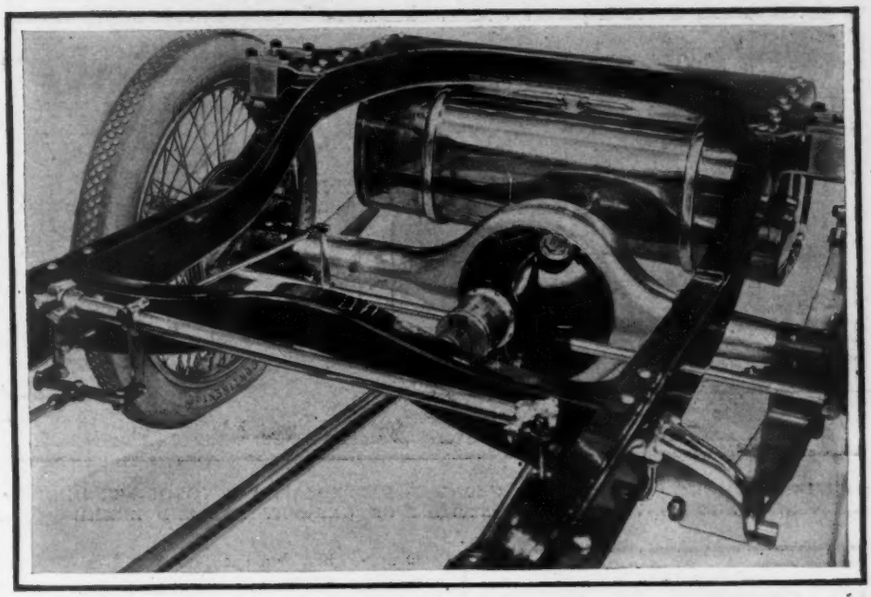
The dynamos of these systems generally are driven by V-shaped leather link belts from a pulley either on the crankshaft or camshaft of the motor; but one maker has a pulley incorporated on the face of the clutch casing which drives a generator arranged directly above; while others suspend the dynamos to one side inside of the chassis frame and drive it by belt from the shaft between the clutch and gearset, or from the propeller shaft just behind the gearset.

There also is a tendency toward the driving of speedometers by belts from the propeller shafts, instead of from the front wheels. It is a simple method, and there should be no reason why it should not be just as accurate. As long as the front-wheel speedometer drive is retained, however, motor car manufacturers might do well to follow the example of one foreign maker and bring out a steering arm on the driving side of the car with a separate lug having a hole in it for the attachment of the speedometer pinion-shaft holder.

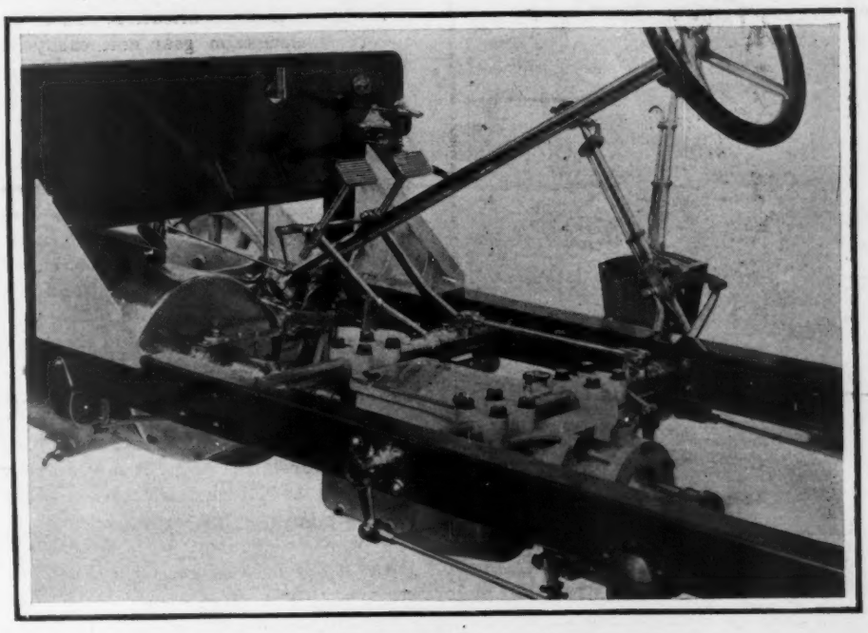
Clutches of many varieties are to be seen on the cars at Olympia, but the cone type still is holding its own. There is a general tendency toward the thorough protection and lubrication of all clutch-operating mechanisms; and facilities are usually provided for the convenient removal of the clutch without disturbing the gearset or other units. Clutch brakes are almost universally fitted, and most of them are simple and effective in design.

Varieties of Clutches

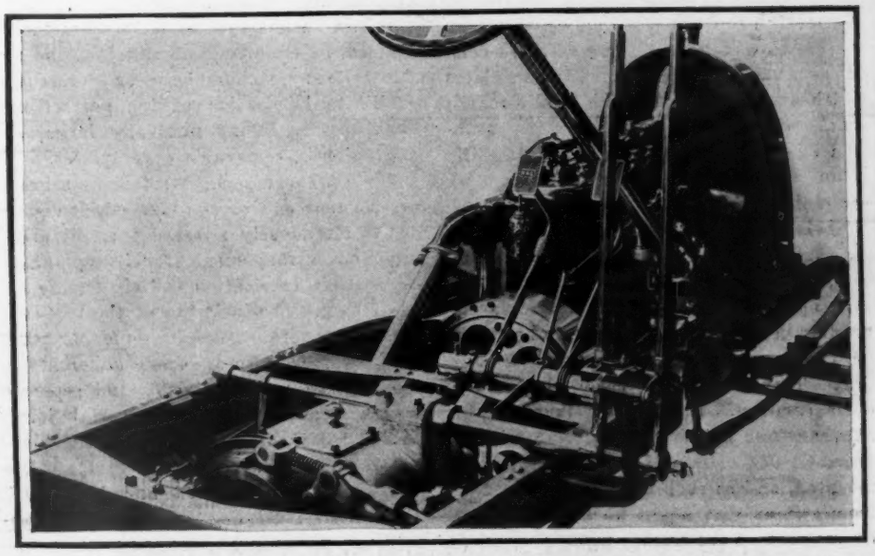
Universal joints or flexible couplings of many ingenious patterns are to be found between the clutches and gearboxes. The coupling between the leather-faced cone clutch and four-speed gearset of the Unic car is quite interesting; it comprises a pair of large leather disks secured to spiders on the ends of the clutch and gearset shafts which not only allow for slight relative misalignment of these shafts, but also provides for the longitudinal movement of the clutch shaft when



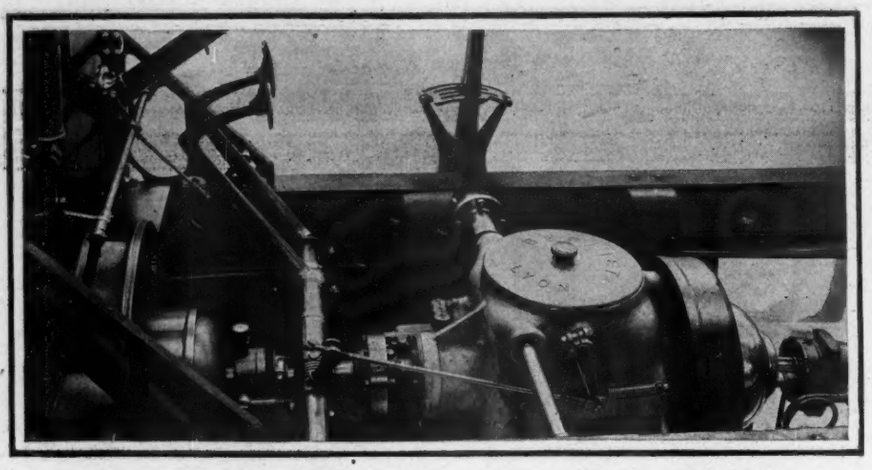
SIMPLE BRAKE-ROD CLEVIS THAT IS FOUND ON THE PICARD-PICTET



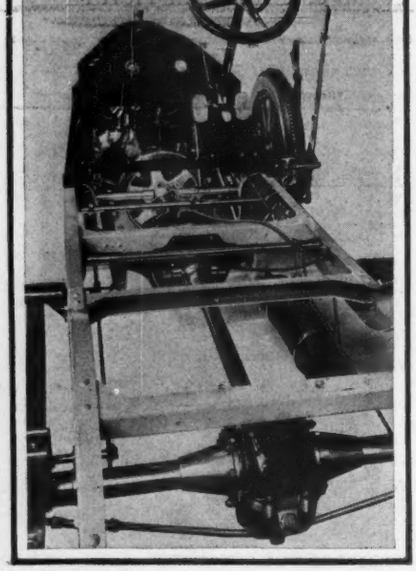
PHOENIX-PEDAL ADJUSTMENTS AND CLUTCH BRAKE



N. A. G. USES EXCEPTIONALLY LONG PEDAL ARMS, FITTED WITH HEAVY SPRINGS



SHOWING BERLIET OIL LEADS TO GEARSET, UNIVERSAL, AND TORQUE TUBE BEARING, AND CONVENIENT ADJUSTMENT OF GEARSET-INCLOSED BRAKE



SHOWING HOSE CONNECTION FROM EXTERNAL OIL CUP TO TORQUE TRUNNION ON THE VINOT

engaging and disengaging it. The Vermorel car also is interesting in this respect in that it employs two couplings between the clutch and gearset; one of these comprises a number of laminated spring plates which are designed to flexibly absorb the shocks between the motor and transmission mechanism; while the other coupling is an inclosed dog and groove design of the oldham type.

There is a tendency toward the use of four-speed gearsets on the medium weight cars, but this no doubt is due to the fact that as a rule the engines are comparatively much smaller than those to be found on the average American car of similar size. Tiny motors on large chassis are quite common. In order to increase the efficiency and noiselessness of transmission gearsets, the cases are very substantially mounted, and in such a way as to be free from strains that might be brought about by twisting of the frame; while every precaution has been taken to eliminate all stresses due to the slight misalignment of the shafts communicating with the shafts of the gearset. Facilities also have been provided to insure lubrication, and to render the transmission gear unit easily and independently removable from the chassis.

Noise-Reducing Features

In the way of noise-reducing features, the Baguley car employs a pair of helical gears for the first speed. Other makers have endeavored to keep down the noise of their gearboxes by means of careful design, short, stout shafts mounted on substantial anti-friction bearings, and adequate lubricating facilities to reduce wear. An innovation is to be found in the Adams gearbox in the form of a small vent pipe designed to equalize the air pressure on the inside of the case with that of the atmosphere, and thereby prevent the leakage of oil from the case. It is reasonably claimed that internal air pressure produced by the heat generated inside of the case when in operation at high speeds, is the cause of most of the oil leakage from the motor car gearcase.

Several cars are provided with oil leads to the transmission gearcases, whereby the oil supply therein may be readily replenished, while the car is in operation if desired, by operating a small pump on the dash. Many makers have endeavored to facilitate lubrication of the gearset mechanisms by fitting unusually large and conveniently removable cover plates.

The European style of mounting a brake on the rear end of the transmission gearset is strenuously adhered to; and many ingenious arrangements for its operation, adjustment, lubrication and air cooling are to be seen. The inclosure of the propeller shaft in a torque tube is a popular practice, but there also are many adherents to the exposed propeller shaft and separate torque member design. Universal joints at the front ends of propeller shafts are generally very substantial in construction, and thoroughly inclosed and lubricated. The hollow steel ball joint is very popular, but the practice of supporting the forward end of the torsion tube in a large yoke which is hinged to a cross member of the frame, also is to be seen on many cars. Several makers have fitted oil leads to the universal joint casings at the forward ends of the propeller shafts; while one or two have even gone so far as to fit a long lead along the torsion tube which conducts oil to the driving pinion-shaft of the rear axle.

A notable feature of rear axle design is the symmetrical form of rear-axle gear housing employed on the great majority of European cars. These cases have a very much neater appearance than when one side of the case bulges out to make room for the differential gear or is offset to support the driving pinion, and the improvement is simply brought about by mounting the large bevel gear ring to one side and allowing the driving pinion to enter the center of the large gear casing. Several examples of these cases are to be seen in the accompanying illustrations.

Another practice which is almost universal abroad, and in which most American cars have been sadly lacking, is that of providing convenient facilities for replenishing the oil supply of the rear axle cases. Many cars are using fluid oils for the lubrication of their rear axles in preference to the non-fluid greases generally employed heretofore, and in order to avoid the introduction of excessive amounts in the rear-axle cases, means are provided to indicate the oil level therein. The de Dion car has a test plug in the side of the bevel gear housing at a height of about 3 or 4 inches from the bottom; and in order to facilitate draining the rear-axle case, the Swift car has fitted a little thumb-screw vent-plug in the top of the case.

Location of Gearsets

Only a few cars are to be seen with transmission gearsets combined with the rear axle housing; in fact, the only one that the writer noticed was that of the H. L. car. This is a new car of comparatively light weight, and its sliding gearset which gives two forward speeds and reverse, is so small and compact as to require hardly more room than the differential mechanism; and as these two mechanisms are mounted on opposite sides of the large bevel driving gear, the whole rear axle housing is so small and symmetrical that a casual observation of the chassis causes one to wonder what has been done with the gearset.

Worm drive is now being used on many of the foreign cars. As for the position of the worm above or below the axle, opinions of the designers seems to be about equally divided, with the above position slightly in favor. The chief innovation in the design of rear axles is confined to an extension of the modern desire to conceal those parts that cannot be dispensed with; and by arranging all parts symmetrically. It is surprising to note the number of cars having axle casings which must be completely dismantled be-

fore any alterations or adjustments can be affected. There can be but little doubt of the advantages of these types of axles in which the differential and main bevel can be removed from their bearings directly the main cover of the housing is removed.

An unique feature in rear-axle fitttings is to be found on one of the Arroll-Johnston cars in the form of a compensating device which is claimed to greatly improve the riding qualities of the car by eliminating the rolling motion characteristic of cars having elliptic rear springs.

Brakes are an important feature of the European car; and many clever arrangements in brake design and construction are on exhibition. In this respect it might safely be said that the European cars are far superior to the average American product. This of course is due to the necessity for very efficient brakes to negotiate the very long grades that exist in some of the foreign countries. Coil springs, with one end anchored and the other end straightened out into a long arm, are very extensively used on brake levers for the purpose of holding them in a released position so as to prevent dragging of the brakes.

Simple Brake Adjustments

There is a general tendency to provide very simple and convenient adjustments which can be operated by hand and without the use of any tools. Great simplicity also is exhibited in the arrangement of brake control mechanisms; and many cars have managed to do away with many rods, shafts, arms, etc.

For example, it was noted on the Martini chassis that a single long brake rod is arranged directly over the propellor shaft. This communicates directly between the pedal shaft and a clevis over the rear-axle pinion, which in turn equalizes and transmits motion to arms on the brake shafts. A very accessible thumb-screw adjustment is provided at the forward end of this long rod; and it was noticed that the movable connections are all high up and fairly out of range of dust, mud and water. The Motobloc, Zedel, and Dennis cars also have similar brake rod and clevis controls.

Ribbed brake drums, on which the ribs, flanges, or fins are employed to strengthen and keep down the temperature of the drums when on long steep grades, are very extensively used. Practically all brakes are of the internal pattern; and as most cars have the emergency hand brake on the transmission shaft, only one set is fitted to the rear wheels. Many reputable makers, however, are using both brakes on the rear wheels, and it is claimed that the tendency is in this direction. Some cars have two expanding brakes of equal diameter arranged side by side on the same drum, others two drums of different diameters; but the use of an external and internal brake on the same drum is not so popular. There are but a very few cars with external contracting brakes on the rear wheels. Front wheels brakes are only to be seen on the Argyll and a large racing type of Isotta-Fraschini. Cable is still quite extensively used instead of rods on French cars; while the Panhard uses flat steel ribbons with adjustable end pieces. These are supported in about the center of their length between two fiber rolls mounted in a bracket under a cross member of the frame; this is to prevent excessive whipping and vibration.

LENTZ OIL TRANSMISSION ON CHARRON CAR, SHOWING SPRUNG DRIVING UNIT, WITH TRANSVERSE CARDAN DRIVE, AND DEAD REAR AXLE

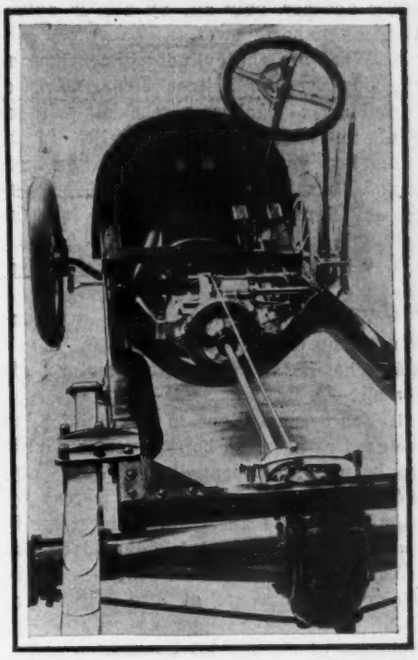
Underslung chassis springs are very popular on foreign cars this year and are to be seen on such cars as the Brazier, de Dion, Mors, Sheffield-Simplex and many others of reputable make. An interesting feature in the spring design is to be seen at the front end of the H. L. car in which the steering spindles are mounted in a telescopic tube which contains a coil spring.

Only small detailed refinements are to be found in the steering mechanisms which are also to be found in those of American cars, while the endeavors to clear the dash of gauges, switches, etc., has succeeded practically to the same extent as on the American car; gauges and switches there are, but these are of a construction that promote cleanliness, and they are arranged in a neat and convenient fashion by the designers.

Cast Aluminum Dashes

Cast aluminum dashboards are becoming popular in Europe, and are used on Rolls-Royce, Napier, Sava, Nazzaro and others. The scuttle type of dash is almost universally employed and the Austin torpedo touring car has gone so far as to provide a curved glass windshield which is practically a continuation of the metal portion of the scuttle dash.

Many little interesting details of body construction and design are to be seen, while the accessory manufactories have brought out numerous fittings and devices to add to the convenience of the motorist. Where scuttle dashes are employed several body makers have provided glass windows which provide illumination for the gauges and mechanisms underneath and others have accomplished the same results by fitting a large wide hatch along the top of the scuttle dash which may be open either to admit air or light.



MARTIN SINGLE-ROD BRAKE LINKAGE, WITH SIMPLE CLEVIS

Cocoa matting is very popular for covering the floors both in front and behind the front seats, and pads of it are placed on the running boards opposite the doors so that passengers may wipe their feet thereon before entering the car.

One type of car has provided a set of brushes arranged under the running boards so that the passengers may wipe their boots upon them before stepping into the car. An interesting innovation in limousine boiler construction was seen at one of the stands. It comprised a large opening in the top which is covered by a sliding hatch. It may be readily opened to admit sunlight or air, while it is possible by standing up in the limousine to look out over the roof of the car. This latter feature should facilitate the use of this type at race and aviation meets.

The Readers

Tires of False Standards

Reader Suggests a Partial Substitute for Theoretical Ratings Adopted by Offical Boards

FRANKFORD, PA.—Editor Motor Age—I have read with interest the discussion of horsepower formulas in Motor Age, but it seems to me that all of them are more or less inaccurate, and that the only way to find out the true horsepower is to test the motor. It would be a good plan for the Society of Automobile Engineers, or some other association, to conduct horsepower tests of the different motors. At the present time a manufacturer can claim any horsepower for his motor he wishes. For instance, one car with a 4⅞ by 6-inch motor is advertised as 40-horsepower, while another, only 4⅜ by 4½, is advertised as 45-horsepower.

2. What are the cylinder dimensions of the Jay-Eye-See, Blitzen Benz, Christie, Grand Prix Sunbeams, the six-cylinder Sunbeam which made 907 miles in 12 hours last year, the 300-horsepower Fiat, Grand Prix Peugeots, and the 300-horsepower Benz, which Burman is now driving?

3. What is the make of the Jay-Eye-See?

4. What is the largest motor ever put in a racing car?

5. What is the largest stock motor built abroad?—A Reader.

1. You are not alone in this opinion, as the need of accurate horsepower standards has been urged repeatedly by Motor Age and others. The ratings of motors by manufacturers is uncertain at best, as, if the S. A. E. standard is adhered to the makers of long-stroke and otherwise high-efficiency motors are at a disadvantage, while brake-test ratings are subject to variances of the normal speed of a motor and to the reliability of the manufacturer. Your suggestion that the S. A. E. or some other association take up the matter earnestly and conduct tests of standard motors is a good one. It might be elaborated to contemplate brake or dynamometer tests of all standard motors at the discretion and expense of the manufacturer, publishing the results, as the standard rating. These tests could be carried out under exactly the same conditions, say at a uniform piston speed, with the same grade of fuel, the same temperature, etc.

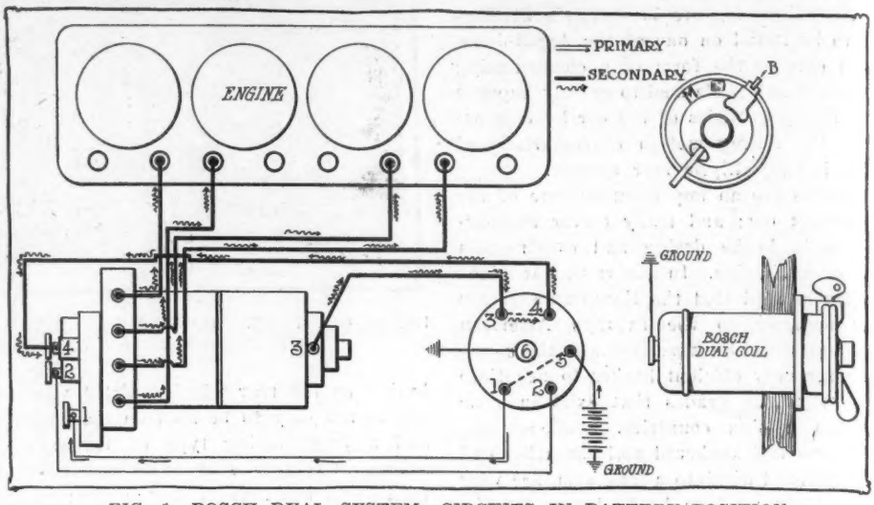


FIG. 1—BOSCH DUAL SYSTEM—CIRCUITS IN BATTERY POSITION

2. These dimensions follow:

Car—	Bore		Stroke
Jay-Eye-See	9¾	x	8⅝
Blitzen Benz	7¾	x	9¾
Christie	7½	x	7
Grand Prix Sunbeams	...		...
Six-cylinder Sunbeams	...		...
300-horsepower Fiats	5⅛	x	7⅞
Grand Prix Peugeots	...		...
300 Benz	7¾	x	9¾

3. The Jay-Eye-See is a Fiat chassis rebuilt with a special body by its owner, Louis Disbrow, and his brother, at his Jamaica, Long Island, home.

4. The Jay-Eye-See motor, it is believed, is the largest that has ever appeared on a race track. It is one of the original 300 horsepower Fiat motors.

5. This is hard to answer, due to the extremely flexible meaning that is attached to the term stock abroad, and to the fact that publicity in Europe is not so searching as in America, so that manufacturers frequently produce special models as stock, without the public being informed of it. The largest motor shown at Olympia was a Benz, which was 7¼ by 7⅞ inches, bore and stroke, of four cylinders, which was rated by the makers at 200-horsepower.

DUAL AND DOUBLE IGNITION

Chicago—Editor Motor Age—On the six-cylinder 48 horsepower 1913 Packard Bosch dual ignition is used as well as battery; and on the four-cylinder 1912 Marmon the makers use the Bosch dual multi-point ignition, also battery.

Can Motor Age show by rough diagram the flow of current through the various metallic connections for both systems on each make of car, from its origin until it reaches the spark plugs? I would also like to have shown the interior connections of the single-unit coil and the flow of current, when the coil switch is on magneto and when on battery. I would like to know how the extra switch on the Marmon is wired up with the coil. Please show the connections of magneto primary and secondary wires. Explain how button on face of coil creates a vibrating and non-vibrating spark.—E. S. V.

The Bosch dual system is illustrated in the three switch positions in Figs. 1, 3, and 5. The arrows indicate the direction and progress of the current through the system. It will be noticed that the direction of flow is reversed for convenience's sake. Fig. 6 shows the two spark-dual system, operating two sets of plugs from the magneto, or in normal running position. Figs. 2 and 4 illustrates the flow of the current when operating on one set of plugs from the magneto and from the battery. Fig. 7, illustrates the interior of a Bosch single-unit coil. The start-

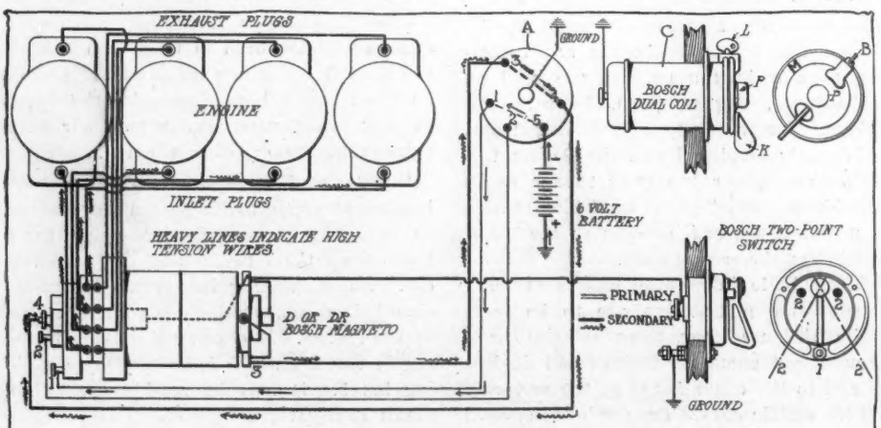


FIG. 2—BOSCH DUAL DOUBLE SYSTEM—CIRCUITS ON BATTERY

Clearing House

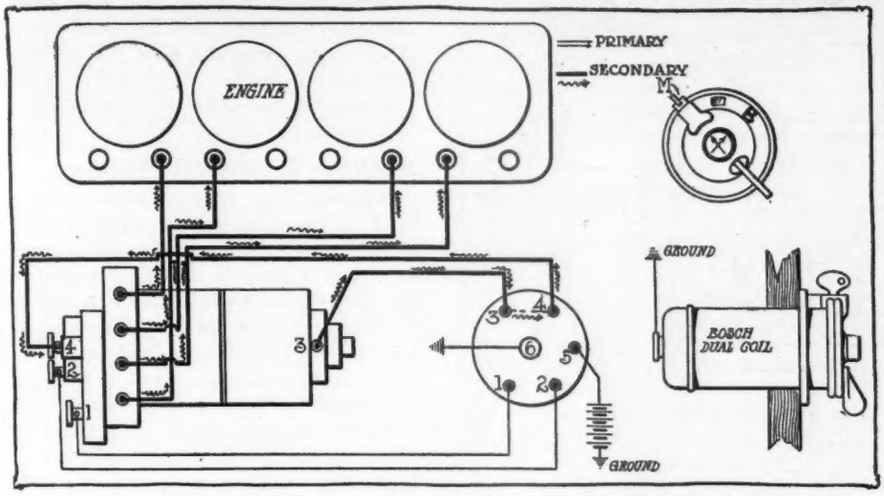


FIG. 3—BOSCH DUAL SYSTEM—CIRCUITS IN MAGNETO POSITION

ing button on the coil for starting cuts the vibrator into the high-tension circuit of the magneto, and induces a spark of great intensity, but of sluggish speed, ideal for starting, but having too much lag for high-speed work; and when not in action, the vibrator is out of the circuit.

PRESSURE AND COOLING

Clarion, Ia.—If gas, such as is exploded in a motor cylinder under normal conditions, was exploded in an air-tight chamber, how long would the pressure be maintained? Does the pressure reduce as the gas cools or does it subside immediately as soon as the burning process is finished? Please answer in detail.—F. S. Thornley.

1—Assuming an air-tight chamber, after combustion the pressure within would subside to a certain extent, owing to the radiation of heat through the walls of the vessel. When the gas within reached atmospheric temperature, assuming the latter as a constant quantity, the pressure will have reached its minimum. This would be slightly higher, though, than, atmospheric pressure, as the products of combustion are lighter than air, that is of less density, and would hence be under greater pressure at a given temperature than the atmosphere. To gauge this accurately, would be quite impossible, as the radiation would proceed at a rate inversely proportional to the degree of pressure reduction produced by such radiation. This variable, in turn would depend upon the rate of radiation, which would be affected directly by the conductivity of the material of which the vessel was made. Theoretically, therefore, the process never would be quite complete, in accordance with the law that variables approaching the same limit may never reach it, however finely they may be divided. Practically, this would probably take years in a room of uniform temperature.

But another practical feature enters into this. This is the fact that no material ever has been discovered that is air-tight. Glass and gold, two of the closest-grained materials known, have been formed into hollow, closed spheres, and cast into several fathoms of sea. After something like a year they were recovered, and found partly filled with water. Assuming, however, an ideal material that was totally impervious, surrounded by a perfect vacuum, the pressure generated within a closed vessel, would not diminish after combustion. However, as such a material is inconceivable to the scientific mind, as it is physically impossible to utterly surround a stationary body, as a perfect vacuum never can be attained, and as no material would be strong enough to sustain the enormous pressure incident to such a vacuum, the pressure in any closed vessel will diminish after combustion, at a rate commensurate: 1—with the conductivity of the material; 2—with its porosity; 3—with the atmospheric temperature and 4—with its heat-absorbing ability.

On Number of Bearings

Comparison of Advantages of Three and Two Bearings on Main Engine Journals

WAKEFIELD, Mass.—Editor Motor Age—What is the maximum speed of a 1913 R. C. H. touring car?

2—Has Motor Age published a description of the R. C. H.? If so, when?

3—Which is generally supposed to be better, the two or three-bearing crankshaft?

4—Tell how gasoline and spark are supplied to rotary motors, and what their advantages are.—G. W. Butterfield.

1—These cars should be able to make 45 miles per hour.

2—The 1913 R. C. H. was described in the issue of Motor Age of July 4, 1912.

3—Formerly the preferences of buyers was for a plurality of main bearings, but in late years with the growth of the lightweight, simple, and low-priced car, has come the development of the two-bearing idea, so that now the balance of popularity is about even between the two. The two-bearing engine is the result of the aim of engineers to combine high efficiency with simplicity, light-weight and compactness. It had its birth practically with the monoblock idea. It was considered imperative in casting four cylinders in one piece to bring their centers as close together as possible, so that little space was left for a third bearing between the two middle cylinders. The distance between the two end-bearings was so shortened by the elimination of this extra length that two bearings were found sufficient to support the shaft. The objections that have been offered against two-bearing crankshafts are that the bearing surface is not usually as long as with the three or five-bearing type, and therefore the strain on each bearing is correspondingly greater; that owing to all of the piston thrust being taken on the shaft between two bearings, the tendency of the shaft to whip between these points is great, while in the three bearings type this tendency is prevented

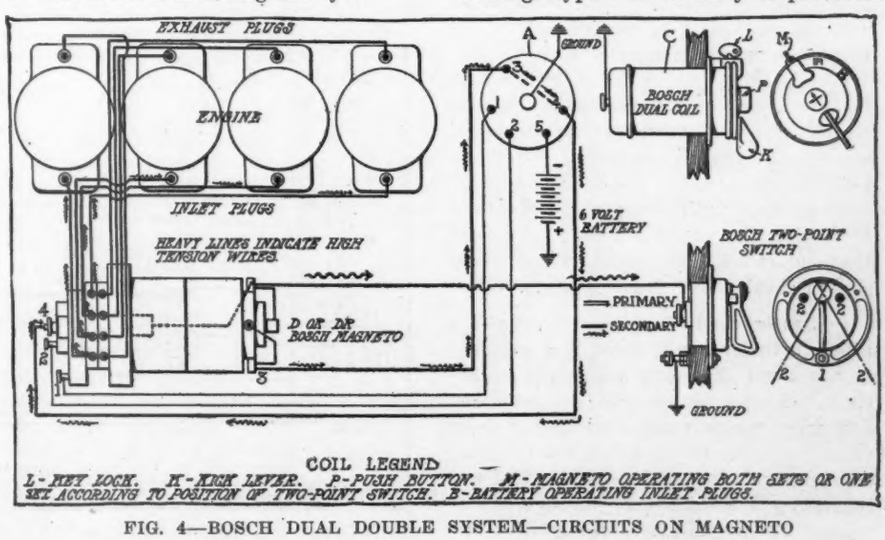


FIG. 4—BOSCH DUAL DOUBLE SYSTEM—CIRCUITS ON MAGNETO

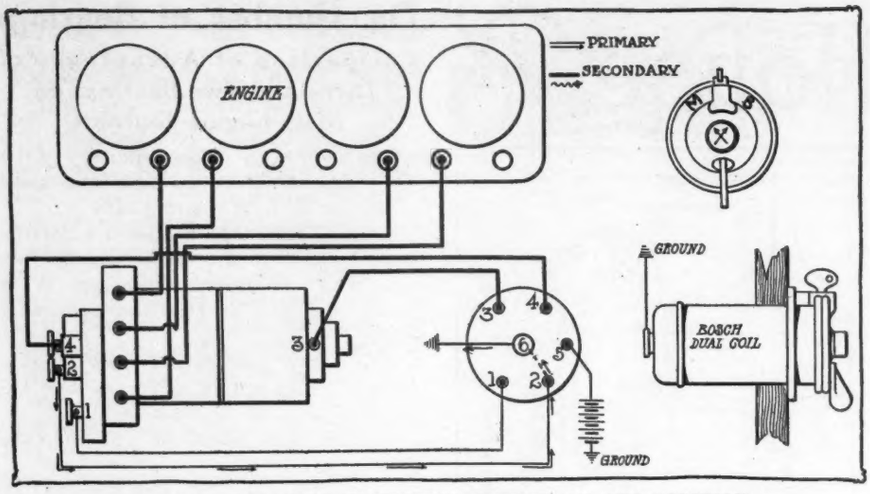


FIG. 5—BOSCH DUAL SYSTEM—SWITCH AT OFF POSITION

by the presence of the center bearing. Looking at the question from both sides, it is to be admitted that these points are valid, but on the other hand, there is less danger of faulty alignment with two than three bearings. While the lessened bearing length may require more frequent adjustment of the bearings on the two-bearing engine than on one with a greater number, these adjustments may be more easily made than where a bearing is crowded in between the crank-throws. While it is not practicable to make the bearings of a two-bearing crankshaft as long as those of the three-bearing type, they may be made larger in diameter, and hence of the same surface-area. The crankshaft may be made shorter and more compact, and therefore stronger than where its length must be increased by the length of another bearing, and the center throws may be included in one crank angle, no return to the center being necessary, as with the three-bearing type, thus permitting a lighter and stronger crankshaft construction. However, while it may be concluded that the three-bearing type has no advantage over the two-bearing type in use on four-cylinder block motors, provided both are equally well designed and well balanced. Motors of this type with three bearings can hardly be said to be at a disadvantage with the simpler type though, and it is this, that undoubtedly accounts for the absence of a decided preference for either type. There can be no doubt, however, of the superiority of the three-bearing type over the two-bearing type on motors whose cylinders are cast in twos or singly. In fact it is thought by some that motors whose cylinders are cast singly always should have five bearings.

4—Gas is supplied to the cylinders of a rotary cylinder motor through a manifold in the form of a ring about the crankshaft, which revolves with the cylinders, and from which pipes lead to the inlet valves of each. Gas is taken into this ring through a passage in the crankshaft, opening into the manifold, or through a stationary half of the ring. The ignition distributor revolves about a stationary brush, individual wires leading to each spark plug. The advantages claimed for this type of motor are lightness, due to its compact construction, practicability of air cooling, due to the positive movement of the cylinders through the air, perfect balance, due to the balancing of all revolving parts, and the stationary crank. In explanation of this last, it must be remembered that bad balance in the usual type of engine is the result of the reciprocatory motion of the pistons and cranks, while in the rotary motors the pistons revolve about a stationary crank-pin, while the cylinders revolve about main journals, eccentric with the crank-pin. It is this freedom from vibration and lightness that has made this type so popular with aeronauts.

PURPOSE OF GLYCERINE

Sioux City, Ia.—Editor Motor Age—Kindly advise why glycerine is used in an anti-freeze solution, such as was published in Motor Age, issue October 17.—Curtis Sash & Door Co.

Glycerine freezes at a lower temperature than alcohol, and is therefore a better resistant of cold. It is injurious to rubber, however, and for this reason it is not used in strong solution. Pure alcohol has the disadvantage of evaporating rapidly, and as it freezes at a higher temperature than glycerine, more of it must be used in water to make a successful anti-freeze. By combining the two, a greater proportion of water may be used than where pure alcohol is used, and the small amount of glycerine employed does not seriously endanger the rubber connections. Such a solution will not evaporate as rapidly as will one employing only alcohol in water.

MISSING ON TWO CYLINDERS

Clarinda, Ia.—Editor Motor Age—I have a four-cylinder, 35-horsepower car of this year's model, which has suddenly developed a peculiar missing. The car is equipped with a Bosch magneto and misses on cylinders 2 and 3 at all speeds, and hits as well as ever on cylinders 1 and 4. There is no spark at 2 and 3 whatever, while 1 and 4 have a strong spark. The wires are in good shape, also the plugs. What is the remedy for this trouble?—L. H. Regal.

There are a number of causes besides defective wiring and plugs that could cause two cylinders of a motor to miss and two to fire regularly. The magneto, itself, must be in proper order or you would not get a spark on cylinders 1 and 4. Look at your distributor and see that the contacts are in good order. It is probable that the distributor brush is worn so that it only contacts on two of the four points. These points may also have become grounded to the metal parts of the distributor. Dirty contacts frequently are the cause of misfiring. Do not be too certain, however, that the plugs are not defective. Try other plugs that are known to be in good condition and see if they will not spark. See that your sparking points are not too wide. Look carefully to your high-tension wiring. See that the insulation is intact, and that the connections are tight.

THE METALLURGIQUE CAR

Evansville, Ind.—Editor Motor Age—Why were the Marquette-Buicks disqualified at the 1910 Indianapolis speedway races? Allowing for the usual changes

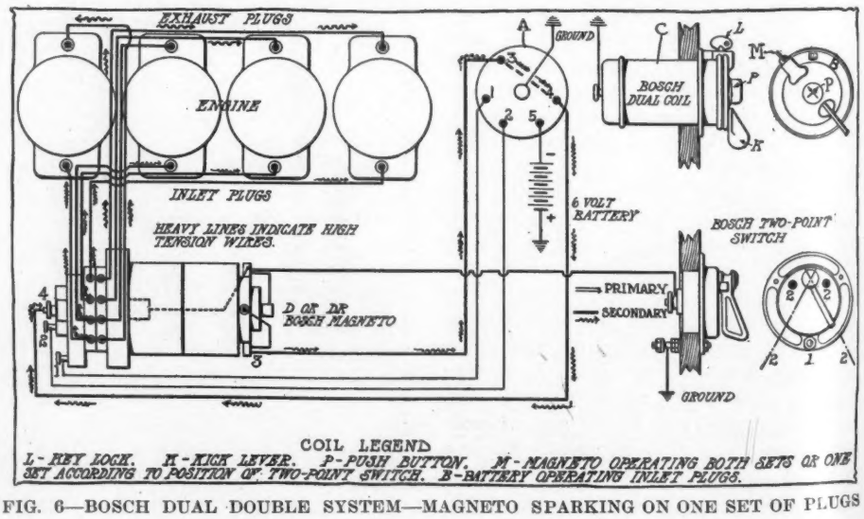


FIG. 6—BOSCH DUAL DOUBLE SYSTEM—MAGNETO SPARKING ON ONE SET OF PLUGS

in the make-up of racing cars, what were the other differences?

2—What is the price of the Metallurgique?

3—Where is it made?

4—What horsepower has it?

5—What does the average race driver do during the winter months?

6—What is the record run between Indianapolis and Chicago?

1—There were no Marquette-Buicks entered in the Indianapolis race of 1910.

2—These cars are listed below:

H. P. S. A. E.	Bore and Stroke	Price in Europe
13.9	3 by 3⅞	$1,350
15.8	3 3/16 by 5⅛	1,925
20.1	3 3/16 by 5½	2,475
20.1	3 3/16 by 5½	2,625
25.8	4 by 6	3,125
25.8	4 by 6	3,475
38.8	5 by 6	4,375
38.8	5 by 6	4,625

3—The Metallurgique is made in Belgium.

4—Please refer to the above table.

5—This is a matter purely personal to themselves. They do everything from touring abroad to working in the shops of their employers.

6—none is recorded.

7—Another meet is planned, and present indications appear favorable to the running of at least one race at the Cream City.

COOLING THE MAXWELL

New Haven, Conn.—Editor Motor Age—I have a model Q Maxwell purchased just 2 years ago. It requires from 4 to 8 gallons additional water to every 20 miles with the shade temperature at 70 degrees or more. Is the radiation of this car sufficient for hilly country? Would it be of any help to add a pump? I use soft rain water, have cleansed with sal soda twice, renewed all rubber connections flushing well at the time; there are no signs of scale, the fan works, there are no cold spots on the radiator, have cleaned the cylinders, used Vacuum, French motor, and Polarine oils in varying amounts, valves and ignition seem to be correct, and adjusted the carbureter and weakened the mixture until there is no power on high. What is the trouble and the remedy?—C. F. Goodrich.

The fault is not with the design of the car nor its radiator. Overheating such as you describe must be the result of lack of driving skill or some abnormal condition in the adjustment or state of repair of the car. A pump is not necessary if the motor is working properly and the cooling system is in repair. To add a pump to a crippled motor would not remove the cause of the trouble, and would therefore only delay the day of final reckoning, even though it might temporarily relieve the condition. If you are sure of your diagnosis as to the working order and cleanliness as outlined above, it is quite likely that your difficulty is with your weakened mixture. Readjust your carbureter for the greatest power at all speeds and leave it alone. The chances are that better cooling will result. If it does not improve matters your trouble is more deeply seated than this. No motor will overheat because of a normally rich mixture. To adjust the carbureter to either extreme, however, will produce overheating, especially if the mixture is made over-rich. As to the valves and ignition, whether or not they are as they should be can only be determined by giving them a careful test and inspection. Consult a valve-timing and spark-timing formula in this and test your motor for timing by having some one turn the motor over slowly, with the petcocks open, and noting when the valves open in number one cylinder, comparing these openings with the marks on the flywheel, if there be any, and with the position of the piston, if there be none. In the same way test the spark timing. Lay number one spark plug on the cylinder and see that it sparks not later than one or two degrees past dead center on full retard and well before dead center on advance. Test your water circulation by putting aniline color in the radiator, and noting the length of time required for it to get to the disconnected cylinder outlet pipe. Look at your clutch and see that it is in good condition. Set your brakes, and with the motor running, observe whether the clutch engagement kills the motor or whether the clutch slips. It is naturally assumed that you have tried carrying your spark advance a trifle higher in operation. The oils you are using should satisfactorily lubricate the engine if your lubrication system is right. Feed enough oil at first to smoke and then cut down to a point where the smoking ceases, and no farther. If the engine formerly cooled properly, the cause must be in defective adjustments or a temporary derangement, while if it never did cool properly, the engine must be defective.

NOTICE TO CORRESPONDENTS

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

Regina, Sask.—A Beginner.
Oakland, Cal.—J. A. H.
Neche, N. D.—Subscriber.
Strong, Colo.—A Subscriber.
Jefferson, Wis.—A Reader.
Harvey, Ill.—B.
Milwaukee, Wis.—Reader for Years.
Oak Grove, Ala.—A Subscriber.
Milwaukee, Wis.—A Milwaukee Chauffeur.
Canton, Miss.—Subscriber.
Indianapolis, Ind.—E. E. J.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.

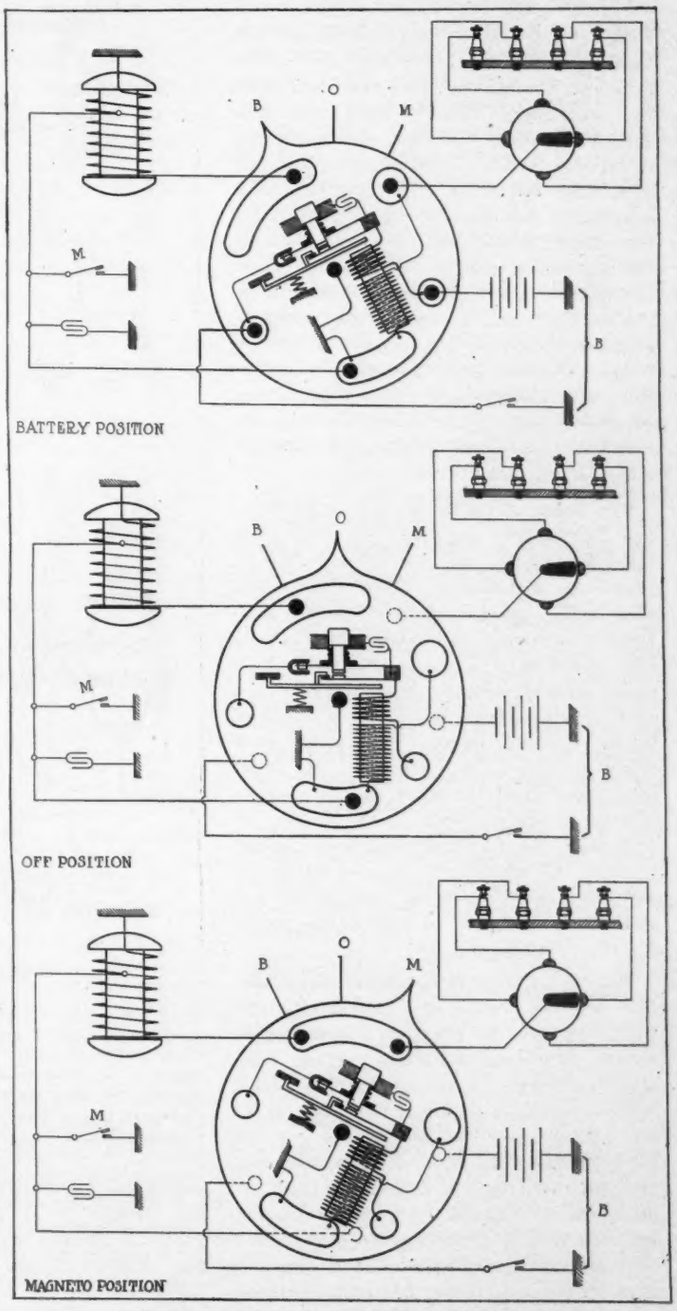


FIG. 7—INTERNAL CIRCUITS OF BOSCH SINGLE UNIT COIL IN THREE-SWITCH POSITIONS

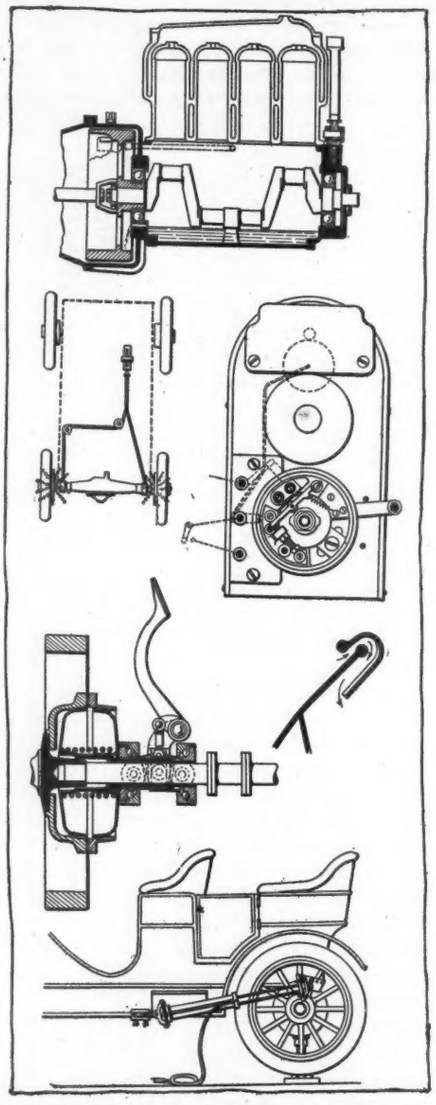
Current Motor Car Patents

ANTI-SKIDDING Device—No. 1,045,609—To William H. Putnam, New York. Filed March 1, 1912, dated November 26, 1912. A chain skidding device, operating on a new principle, is embodied in this invention, in which the chains are separate from the wheel, instead of being carried by it. These chains, which are in short length, with loose ends, are about eight in number, are secured at one end only to a common center, in the form of a roller, mounted on a bracket to the rear axle of a motor car. This roller is adapted to engage the side of the tire, adjacent to the ground-bearing portion, being thereby revolved, and the chains attached thereto revolved and extended by centrifugal force. They are thus forced between the tire and the road, in rapid succession, thus affording the tire a positive frictional grip upon the road, adapted to prevent side-slipping. Suitable controlling means are provided to enable the operator of the car to bring the rollers down into contact with the tire, or to raise the bracket arm up away from such engagement, and the chains out of contact with the road. Such a device would be more silent than an attachment to the wheels themselves, and would not wear the tire nor produce wheel-resistance when not actually required.

Tire Pump Attachment—No. 1,045,272—To Edwin W. Fishburn, Denver, Colo. Filed August 22, 1911, dated November 26, 1912. An attachment to the rear wheel of a motor car for the purpose of operating a tire pump is covered by this patent, consisting of a plate to which a wrist-pin is secured, adapted to be clamped to a spoke of the wheel, and a clamp attached to the running board. The pump base is pivoted to the clamp on the running board, and the head of the plunger jointed to the wrist-pin on the spoke. In operation, one wheel of the car is jacked up, and the attachment secured as above, and the other wheel being blocked, the car is thrown into gear, to operate the pump for the inflation of tires.

Mercedes Clutch Mechanism—No. 1,045,527—To Paul Daimler, Cannstatt, Germany, assignor to Daimler Motorengesellschaft, Stuttgart, Germany. Filed June 10, 1912, dated November 26, 1912. In a double cone clutch, this patent relates to an operating mechanism, for the purpose of disengaging the friction cones from contact with the cups, or permitting their engagement as induced by a spring situated between them. These cones are provided with sleeves extending back, and provided with spaced ball thrust bearings, mounted on slidable forks, held against rotation, and provided with rollers. An operating pedal is connected by a jointed angle arm to a wedge disposed between these rollers, which, when depressed, separates the thrust members and moves the cones toward one another, out of engagement with their respective cups.

Splitdorf Magneto—No. 1,045,406—To Theodore Hubert, New York, assignor, by mesne assignments, to Splitdorf Electrical Co., Newark, N. J. Filed October 12, 1907, dated November 26, 1912. Referring to the make-and-break mechanism of a magneto, this patent relates to a bored-out armature shaft, containing an insulating member, also provided with a bore. Supported by the insulating member is a contact member connected with the secondary winding of the armature, and with a second contact secured to an insulating sleeve disposed within the insulating member. This second contact is mounted on a movable post, located within the insulating sleeve. A contact disk is secured to the armature, in circuit with the primary windings, in contact with a brush, carried by an insulating means. An adjustable plate carries two contacts, one of which is movable, and the other insulated from the plate. The movable, insulated contact, carried by the movable plate, is adapted to be moved into and out of engagement with the brush, while the stationary contact is connected with a second insulated brush.



INTERESTING INVENTIONS OF THE WEEK

Howard E. Coffin's Splash Lubrication System
Putnam Non-Skid Device
Splitdorf Magneto-Breaker Mechanism
Daimler Double Cone Clutch Actuating Linkage
Chalmers Closed Dash Ventilator
Fishburn Power Pump Attachment

Coffin's Lubricator—No. 1,045,770—To Howard E. Coffin, Detroit, Mich., assignor, by mesne assignments, to Charles E. Wiffler, Detroit, Mich. Filed April 13, 1908, dated November 26, 1912. This lubrication system is of the constant-level circulating-splash system, without a pump, the circulation being maintained by means of the fly-wheel. The splash chamber is provided with an overflow, through the rear main bearing, which is so situated that the oil level is kept by it, at the proper height for splash lubrication of the cylinders, connecting rods, and wrist pins. The overflow from the rear main bearing is received by a closed fly-wheel housing, the lower portion of which constitutes an oil reservoir. The fly-wheel serves to raise this oil from the level of the reservoir to a pocket, situated in the side-wall of the fly-wheel case, from whence it is led back to the crankcase.

Chalmers Dash Ventilators—No. 1,045,776—To George W. Dunham, Detroit, Mich., assignor to Chalmers Motor Co., Detroit. Filed February 10, 1911, dated November 26, 1912. To provide ventilation for the popular closed front touring and roadster bodies, this patent relates to a dash construction wherein the upper edge is covered by a curved deflector, enshrouding it on both sides, and providing a passage for air from the front side, ahead of the windshield, if there be one, to the inside of the car.

Motor Car Sleigh—No. 1,045,771—To Ralph Carroll, Simonsville, R. I. Filed January 21, 1911, dated November 26, 1912. A special vehicle is referred to in the claims of this patent, comprising front and rear pairs of runners, upon which a motor-driven chassis is mounted. The front runners are provided with steering means, and the rear with open bottoms, in which caterpillar traction elements are disposed, motor-driven by a shaft and bevel gears.

The Motor Car Repair Shop

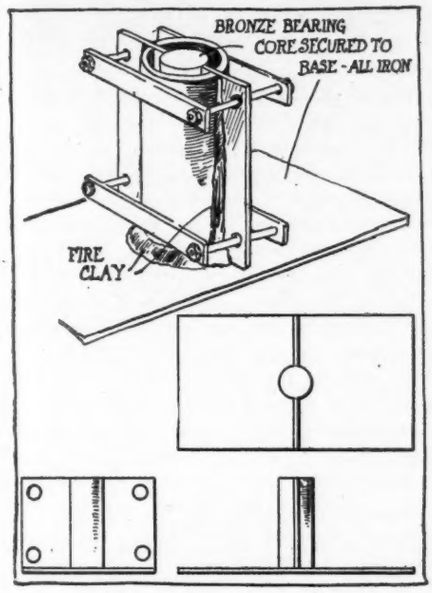


FIG. 1—EQUIPMENT FOR RE-BABBITTING

Re-Babbitting Bearings

A BENT shaft will quickly ruin a set of plain bearings such as is employed in most motor car engines, and where the shafts are employed in the transmission or rear-axle the damage may be equally great one way or another. When a motor crankshaft is bent the motor bearings are bound to wear rapidly and then give rise to disquieting knocks, and any effort to refit the bearings or take up the lost motion will be fruitless unless the shaft is first straightened or trued up. The truing up of a motor crankshaft requires so much skill on the part of the workman that many manufacturers discourage the idea and recommend the fitting of a new crankshaft. There are many, however, who claim to have straightened crankshafts very successfully. Good advice on this point is to take all precautions to prevent the springing of shafts, and then should misfortune occur take the job to a reputable shop where the equipment and character of the workmen are most assuring.

The great majority of up-to-date motors now are fitted with bronze bearings lined with white or Babbitt metal; white metal generally meaning Babbitt metal or some of the other alloys, used for bearings, that are white in color. A few words therefore on a means and method of relining these bearings with the white metal when they become worn, may be appreciated.

In Fig. 1 is shown the equipment employed for this purpose in one of the greatest repair shops in the world. It comprises a mold, and facilities for conveniently securing the halves of a bronze bushing thereto, so that the molten white metal may be flowed into the bushing. The design of the mold is shown in the mechanical sketch in the upper left-hand corner of the illustration. The base plate is of sheet iron about ½-inch thick, whilst the transverse vertical partition is of cast iron and of the same thickness except for the solid-cylindrical central portion or core, which is of a suitable diameter to allow for shrinkage and machining of the white metal lining after it has been poured and cooled.

There are two pairs of clamps provided to hold the halves of the bushing in place, and it will be noticed that holes are provided in the wings of the partition on either side of the core, through which the bolts of the clamps may pass. It will be noticed that the upper clamp is near enough to the top of the bushing to cover the hole provided to form an anchorage for the white metal lining; the lower clamp also is arranged high enough so as to cover the central hole; whilst the lower hole is covered with fire clay. These holes are quite clearly shown at H in Fig. 2, and are provided so that the metal that flows into them forms integral lugs that serve to keep the lining from turning should it tend to break away or separate from the bronze portion of the bushing. The grooves shown at either end of the bushing are provided for a similar purpose, to keep the lining from moving endwise in the journal or bushing, journal being another name for the bearing box or bushing. It is important that in rebabbitting a bushing great care should be taken that none of the oil holes are closed. Generally either the center hole, or the two end holes in the upper half of a journal box, are provided to admit oil to the bearing; these must be kept clean, and not filled up by mistake, otherwise the bearing will be quickly burnt out for want of lubrication. To further secure the white metal lining in the bushing, it is customary to tin the inner surface with a coat of solder. This consists in applying a coat of tin with a soldering iron so that the white metal will adhere more tenaciously when flowed into the bearing.

As it is customary to file off the edges of the two halves of a journal box in order to bring them closer together when worn; by the time relining, or rebabbitting, is necessary, it also becomes necessary to build up the bronze portion of the bearing as well; and this is done by making a pair of shims or liners out of a piece of sheet brass about 1/32 or 1/16-inch thick as the case may require, and sweating these onto the edges of the bushing halves. These should be made and fitted before the bearing is tinned for the white metal; then the tinning and sweating on of the shims can be done at the same time.

After the halves of a journal box have been prepared for the reception of the white metal they must be secured to the mold and centered so as to be concentric with the core; then the crevices at the bottom and up the sides should be closed with plastic fire clay. The chill then should be taken out of the whole outfit as it stands by playing the flame of a torch upon it. While warming the mold in this way the white metal should be on the fire and in a molten state, so that when the mold has been warmed until the tin on the inside of the journal box is about to flow, the molten white metal can be poured into it at the top, which is left open for that purpose.

Lubricating and Preserving Springs

It is a custom in one of the largest repair shops in the world to lubricate and preserve the chassis springs of motor cars whenever they are disassembled for an overhauling by painting them with a mixture of graphite and cylinder oil. This mixture prevents the accumulation of rust between the leaves, and improves the riding qualities of the springs. The mixture is prepared by simply mixing powdered or flaked graphite with cylinder oil to a pasty consistency; and it is applied with any suitable paint brush.

Oil in Rear Axles

When noise cannot be reduced by adjusting the bevel pinion of a rear axle, and it is known that sufficient lubrication with a suitable grade of oil is being provided, then the bearings may be suspected and the axle should be examined by an expert. The introduction of graphite into the oil used in a rear-axle mechanism is claimed to be very beneficial, but the use of sawdust, etc., in this manner to reduce noise is a very poor makeshift which is bad mechanically and otherwise.

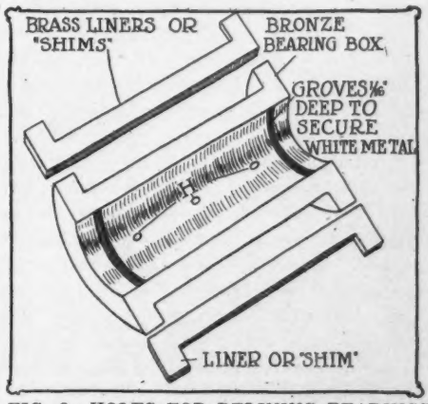


FIG. 2—HOLES FOR RELINING BEARINGS

From the Four Winds

FEDERAL Aid in Mississippi—Work is soon to begin on the first roadway in Mississippi built with federal assistance. In order to improve the routes of the rural carriers the government will furnish $10,000 for the improvement of the road between Greenwood and Carrollton. The county has agreed to furnish $20,000.

Brazil Encourages Roads—A loan netting $650,000 has been floated by the Empreza Autoviaria Paulista, a company which has a government concession for building a motor coad connecting Sao Paulo and Santos, Brazil. The building of this road will mean that a motor car will become a necessity to each one of several thousand coffee planters interested in the vast territory between these two ports.

Canadian Road Report—Up to October 26 last of the 62½ miles of macadamized road laid with government materials, 18 were on the King Edward road. It is estimated that during the past year no less than 12,161 miles of road were maintained systematically under articles 535 and 1,080 of the municipal code and under good roads act of 1911. The precedent established in the case of the road from Montreal to Rouses Point is likely to be followed, the government guaranteeing a large proportion of the cost and the municipalities but a small percentage.

Road Meeting for Missouri—Plans were made at a meeting of the recently organized Missouri Highway Association, held in Kansas City, November 20, to bring together all the organizations in the state that are interested in good roads for the purpose of crystallizing the sentiment and getting some definite result in the matter of good roads. What will probably be the largest good roads meeting ever held in the state will be the meeting which has been called for December 11 at Jefferson City. At this meeting a plan will be brought forward whereby the commission can, without an increase in taxes, raise $2,000,000 to be used in the construction of good roads throughout the state. This plan as outlined by Roy F. Britton, president of the association, will make use of the state road fund, which is at present $300,000 annually. At the present time this amount is divided among the 114 counties of the state, each receiving 3 per cent, and this only when called for. The sum received by each county is so small that but little good can be accomplished. It is proposed that $100,000 of the annual road fund be used for paying a $2,000,000 bond issue at 5 per cent and $100,000 be set aside as a sinking fund to retire the bonds in 20 years, and as provision can be made to retire any portion of the bonds each year, this will reduce the interest each year. The proceeds of the bond issue to be spent by a highway commission. The balance of the road fund, about $100,000, is to be used by the commission in administering the law and for emergency work.

Aldermen Aroused—A Milwaukee alderman has come forward as the protector of the motorists by asking the Milwaukee common council to pass his ordinance making it a misdemeanor for street car companies to maintain tracks with sharp or cutting edges at curves, intersections and switches, or such as may be above the grade of the street. The alderman is Benn P. Churchill, the only Socialist alderman who owns a motor car, and therefore one of the few or the only alderman of that creed who is interested in legislation benefiting the owners of cars. The proposed ordinance would place a penalty of $10 to $100 on the violation of it, with an alternative of not more than 90 days in jail.

Getting After Car Thieves—The theft of five cars in Milwaukee in 8 days' time has caused a renewal of the agitation for a state law which will place motor car stealing on the same plane as horse stealing. Not only has the Milwaukee Automobile Club, father of the movement, become more active, but the services of the insurance and indemnity companies have been enlisted and will present a solid front before the coming legislative session. Of the twenty or thirty cars stolen in Milwaukee during the present year, all but two have been recovered, generally in a damaged condition. The underwriters are employing private detectives, but as yet have not made any considerable headway over the police department.

Spain Wants American Motorists—American motorists are invited to visit Spain if they want to do some touring abroad over some excellent roads, according to Louis Scatti, of Madrid, who is spending some time in Boston. "I want to see all Americans who visit Europe include a trip to Spain. No country of Europe offers greater inducements in picturesque and varied scenery and the conditions for motor travel are excellent. Within the past 12 months 37,000 miles of road have been put in fine condition for motor cars. An appropriation of approximately $10,000,000 has been made by the government for road improvements. No one has done more to popularize the sport of motoring than King Alfonso. For those touring by motor the facilities for getting the cars into Spain are easy. Any member of one of the national motor organizations need only apply through his association. A steady improvement is taking place in Spanish hotels and few large towns are now without at least one first-class place, while in Madrid the competition has done much to improve conditions."

Roads an Election Issue—Improvement of highways formed the issue in many election districts in Wisconsin. At Appleton, Wis., the question of building good roads or no was the only issue between two candidates for the assembly, and the good roads advocate won out. As the result of the increase of good roads advocates in the state senate and assembly, it is probable that the annual appropriation made by the state for highway reward will be increased from $350,000 annually to a figure probably double that.

Election at Wilmington—The Wilmington Yacht and Automobile Club has elected the following officers for the ensuing year: Charles R. Smith, president; Coleman du Pont, president of the E. I. du Pont de Nemours Powder Co., commodore; John B. Bird, Harold S. Schutt and Edward R. Pusey, vice-presidents; Joseph Bancroft, A. Felix du Pont, John B. Bird, Harold S. Schutt and Edward R. Pusey, executive committee; Charles W. Bush, secretary; William H. Forbes, treasurer; Harold S. Schutt, Joseph Bancroft, A. Felix du Pont and Egbert Moxham, directors for 3 years.

Stirred Up Over Roads—More than 100 members of the East St. Louis Commercial Club motored to Collinsville, Ill., last week to meet the Illinois state highway commission, which is touring the several suggested routes for the new state highway. East St. Louis has carried on an active campaign to have the highway through East St. Louis instead of Granite City. The highway commission, accompanied by motorists and good roads boosters from all the towns between East St. Louis and Springfield, was brought to East St. Louis, where luncheon was had in the Elks' Club. Good roads talks were made during the luncheon.

New Road Association—Good roads boosters of the tri-cities and vicinity held a mass meeting in Davenport, Iowa, last week, forming the temporary organization of the Tri-City Ocean-to-Ocean Official Highway Association, whose permanent organization was placed in charge of a committee composed of Reed Lane, chairman, Davenport; John H. Bushong, Moline; George W. Ross, East Moline; H. S. Cable, Rock Island; A. E. Nissen, Davenport. The main object of the meeting was to secure the routing of the new ocean-to-ocean highway through Moline, Davenport and Rock Island as the exit point from Illinois and entry into Iowa. The only other proposed entry point is Clinton, Iowa, which already has raised

a considerable sum of money to have the tourist road to the Panama exposition routed through there. Iowa City and the Tri-Cities are the only cities which would suffer to any great extent if Clinton were preferred.

Helps the Churches—Church attendance has been increased in New Orleans by motor cars, according to statements from several clergymen. Delays in getting horse-drawn vehicles ready or the inconvenience of crowded street cars are objections removed by the motor car, which tend to increased attendance. In addition the pleasure of the ride before and after the service adds recreation to the ecclesiastical duty.

Booster for Federal Aid—Federal aid for highway construction will receive a considerable impetus from the Badger state as the result of the entrance into congress of Elmer E. Browne, of Waupaca, Wis., who as state senator for 8 years was one of the most ardent advocates of state reward and is known as one of the parents of the present state aid law now in force in Wisconsin.

Milwaukee Likes Asphalt—More than 350,000 tons of asphalt were laid on the streets of Milwaukee during the season of 1912, according to the report of the commissioner of public works, and next year it is planned to increase this aggregate by 50 per cent. In addition to the 350,000 tons of new asphalt laid as pavement, there were used 41,000 tons for repair work on old asphalt streets. By the close of the coming year Milwaukee motorists, who have been bitter in their denunciation of the lack of care of pavements, will hardly have cause for complaint. In addition to suffering damage to tires and mechanism of cars, the motorists have been obliged to hear criticism from motorists from all parts of the country who visited Milwaukee, and the tourist business has thereby suffered to a considerable extent.

Ontario's Motor Revenue—Ontario's revenue last year from the sale of licenses for motor vehicles totaled $50,831.25, twice the amount received during the year 1910, which was $24,394. The revenue for 1906, the first year fees were imposed, was only $15,235.15. The licenses issued last year totaled 11,339, and for 1910, 4,320, while in 1906 1,176 licenses were issued. Fees collected for issuing charters to automobile corporations totaled $235,663.10.

Texas After Car Thieves—An effort will be made to secure the passage by the Texas legislature at its next session, which meets in January, of a law making it a felony for any person to take or use a motor car for any purpose whatsoever without the consent of the owner. This proposed measure is being advocated by Chief of Police I. N. Davis, of El Paso, who has obtained the support of the chiefs of police of Dallas, Fort Worth, Houston, Galveston, Waco and San Antonio to the proposed bill. The measure will be introduced in the legislature by Representatives Richard Burges and Eugene Harris, of El Paso. The law with reference to the taking of cars, according to Mr. Burges, should read that a person taking one for any purpose without the consent of the owner, shall be guilty of a crime, and his punishment assessed at so many years in the state penitentiary, or, where the offender is under age, so many years in the reform school.

Ohio's Chauffeur Registration—There is one county in Ohio that has not a single chauffeur. That is Vinton. According to the report of Registrar Shearer to Secretary of State Graves there are 7,931 licensed drivers in the land of the buckeye. Cuyahoga, with Cleveland as the metropolis, leads with 1,770, while Hamilton, with Cincinnati as the metropolis, is second with 1,320. Franklin has 772. There are a few machines in Vinton, but the farmers must like driving themselves.

Merger in Winnipeg—The Winnipeg Motor Trades' Association has been affiliated with the Winnipeg Industrial Development Bureau, and two representatives of the association have been elected to the board of directors.

Boston Grants Parking Space—After studying conditions for several months following a number of hearings granted to motorists the Boston street commission has picked out a number of parking spaces for motor cars. However, only about one-third of the requests made by the motorists have been granted. The traffic rules adopted 3 years ago provided for parking spaces along the Common side of Park and Tremont streets and Postoffice square. Now the following places have been designated: Doane street, northerly side, where cars may stand half an hour; Bowdoin street, between Beacon and Derne, alongside the state house; Beacon street, the entire length of the Common; Charles and Arlington streets, flanking the Public Garden; Newbury street, between Berkeley and Clarendon streets, all for a period of 1 hour. Doane street is the only downtown business street in the list and it is a very short street and narrow.

Old Roads Made New—No. 6—In the Old Dominion

Here is a stretch of road near Petersburg, Va. One illustration shows the road before it was improved and the other shows it afterwards

The Realm of The Commercial Car

Narrow Alleys Handicap to Chicago

Congestion in Loop District Forces Police to Arrange System of Movement That Will Help in Operation of Motor Trucks and Other Vehicles—Investigation made by Motor Age Produces Interesting Facts

By W. B. Stout

THE Chicago business district has too little alley space. Traffic through many of the alleys is poorly managed. Realizing the inadequacy of present methods of handling alley traffic, the Chicago police department is arranging a system of movement through these cross lanes which will relieve at least a part of the present congestion. Traffic in narrow alleys will be run only one way and special care will be taken to eliminate long waits.

Probably the busiest alley in the Windy City is that located back of Carson, Pirie, Scott & Co.'s store, running between Madison and Monroe streets. With an entrance at either end but 13 feet wide as many as 500 vehicles a day are handled in this lane, a large part of it at rush hours.

The Boston Store Alley

A close second is the alley back of the Boston Store. The writer recently noted a case where this alley was completely filled with vehicles and with eighteen more waiting outside for their turn at the alley.

Other alleys are almost as bad, the one back of Siegel, Cooper & Co.'s store necessitating an average delay of over an hour. Often 2-hour waits are made at this point. Back of Rothschild & Co.'s department store the waits often range from 1½ to 2½ hours. At the Boston alley waits of 3 hours are not unusual.

Talking with several drivers in this waiting line at the Boston Store they gave the following time as usual for the department store alleys of downtown Chicago: Boston Store alley, wait 1 to 3 hours; The Fair, wait average 1 hour; Siegel, Cooper & Co., wait ½ to 1 hour; Rothschild & Co., wait 1 to 2½ hours.

Whole Story in Itself

The alley back of Carson, Pirie, Scott & Co.'s establishment is a whole story in itself. Here there can be seen in any 1 day as many phases of alley delivery as one cares to contemplate, and every hour shows up new defects and new requirements in city delivery.

Fig. 1 shows the arrangement of the alley in general. At the north end is Madison street. From here a 13-foot alley runs toward the center of the block, alongside the Heyworth building. This building is built right up to the line of the company's property, the alley itself being on Carson-Pirie's ground. The Heyworth building not only makes use of this alley, but by the arrangement of the loading platform actually blocks its use for Carson-Pirie and others for sometimes several hours a day. This platform comes just where the alley widens out and is shown very clearly in the illustration A, which not only shows the arrangement, but explains some of the traffic congestion at this point.

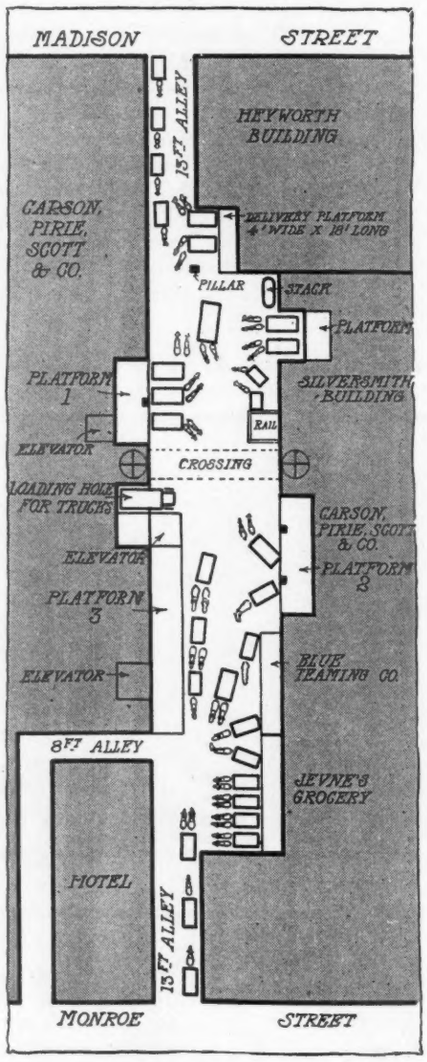


FIG. 1—ALLEY AT REAR OF CARSON, PIRIE, SCOTT & CO., CHICAGO, SHOWING AVERAGE CONGESTION

The team A is backed up to the Heyworth delivery platform as far as it will go and yet one can see how great a proportion of the vehicle projects into the alley, which is much too narrow already. It is for this reason that most of the interesting incidents in the alley happen at this point.

When teams are in place at the Heyworth platform, as they always are, there is but barely room for a two-horse team to pass through, and while the teams are backing into the space the alley is completely blocked at this point. For an extra wide wagon to pass through this end of the alley is a very close job.

One Cause of Delay

The writer noted the delay caused by the passing of a box wagon with a wide body. The wagon at A was backed into position. The express wagon was also at B and the box wagon, which with the horses, was 27 feet long, attempted to pass. It got wedged in first at an angle between the two vehicles. Then five men—the policeman and idle teamsters—slid the back of the empty wagon around and set it straight down the alley. Trying to get by again the wagon box this time wedged in between the wall on the left and the footboard of the wagon on the right. It was some time before the vehicles were gotten apart. After this the box wagon backed into the bigger part of the alley while the driver of the wagon A maneuvered around to get his vehicle a little further back. It took over 10 minutes to get the box wagon through this space.

The Heyworth Platform

The Heyworth platform can accommodate only two wagons in the open space, which is 9 by 18 feet in dimensions. On one morning when it was visited an ice wagon had been standing in this space for 1½ hour and a paper wagon for 2 hours. This held others away and there were four wagons waiting a turn. These only had access to the end of the platform, which is but 4 feet wide, and further encumbered by a very dirty waste box and a litter of papers. This left a platform space of less than 18 inches for the unloading. The

wagon C is shown backed up to this point, the open waste box being seen at D.

Another loss at this point is occasioned by lack of facilities inside the building. For one thing the elevator closes down at noon so wagons arriving at this time must wait until the elevator man gets back. Then there is but one slow elevator to serve the nineteen-story building. There is no receiving clerk and goods must be carried up by the drivers. One delivery was noted where a driver took 1½ hour to deliver three boxes in this building—small ones, too.

A further revelation of inefficiency was seen when a three-horse coal wagon, after waiting 1 hour outside the entrance of the alley, drove in to make a delivery to the Heyworth building and it was discovered that the emergency coal hole was under the wheels of both wagons then in the platform area. Hence the coal wagon had to wait 1½ hour more until both wagons had left. Then it was impossible to back into the area from the alley side on account of completely blocking it, and the wagon had to back in endwise, parallel to the position of the wagon G in the illustration. In this position the coal could neither be shunted out of the rear gate nor through the side chutes so that the whole load had to be shoveled off over the rear wheel and by hand.

Views of a Policeman

As a result of this experience the officer in charge of the alley barred coal deliveries in the alley until after 5 p. m. The driver of the coal wagon was very indignant over the situation and bewailed his luck at getting such a haul.

"I get but $1.17 for this load," he said, "and look how long it takes. These new motor trucks are getting all the good routes and we fellows have to take this kind. We can't make so many deliveries as we used to and that cuts us down. No, we don't like this kind of coal delivery."

Before this coal wagon got into the alley a second one was waiting in the street outside for its turn to enter.

"There is a great disadvantage in letting coal wagons in here during rush hours," said the officer, "for once they get in and block things, it is often impossible for the horses on the load to handle it in backing. They put such heavy loads on horses in coal work and when they can't back up they hold everything. Then all the rest of the traffic has to move about and give way to the coal wagon, and the result is more delay. It is best to keep them out until later."

Before the alley will be really handy for traffic either the delivery opening at the Heyworth building will have to be deepened so that teams can back in out of the way, or the building cut away to widen the alley to its proper size all the way through. The latter would be the better way so far as traffic is concerned. Certainly something should be done to enforce better arrangement at this point.

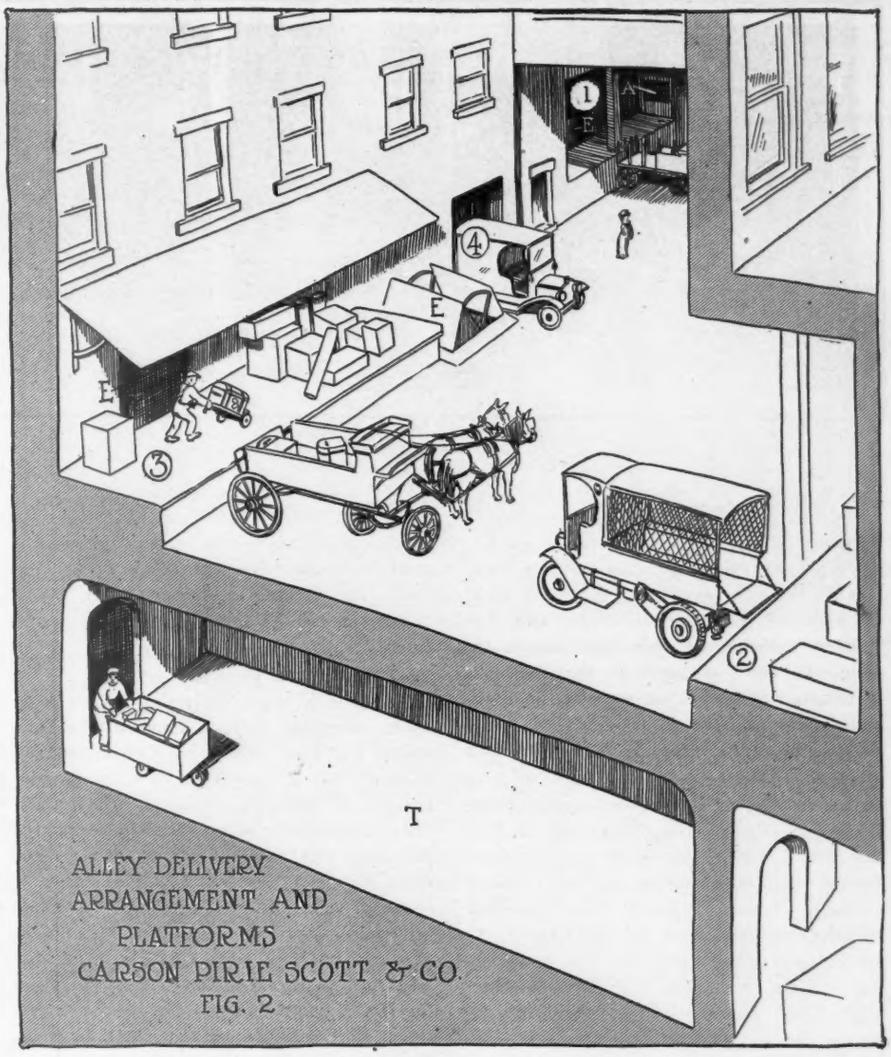


FIG. 2—ALLEY DELIVERY ARRANGEMENT AND PLATFORMS AT CARSON, PIRIE, SCOTT & CO.'S.

Next to the Heyworth building is the Silversmith building, having a platform for two teams. These are shown backed into position at E. The amount of blockade caused by these vehicles is not so great and the building is not so large as the Heyworth, but that the platform is vacant for a fair percentage of the time. Often the space, taken up in the picture by the wagons E, is filled with wagons waiting for a chance at the Heyworth delivery platform, and then wagons to the Silversmith building must wait their turn until the waiting vehicles can get out of their way.

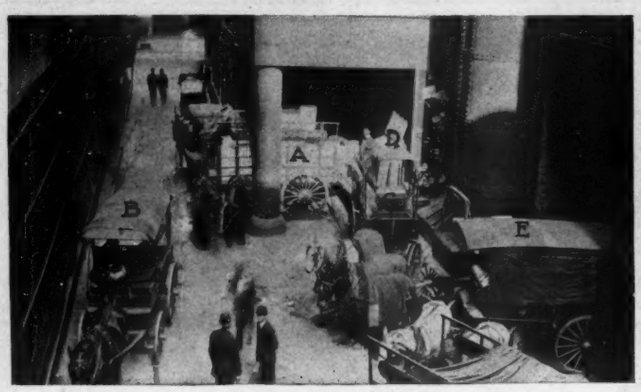
The first Carson-Pirie delivery platform is opposite the Silversmith platform, but a trifle south and has room for six to eight wagons. This platform is flush with the wall of the building as shown at 1 in Fig. 2 and in the photograph B, and is served by an elevator E. Traffic conditions here are fair, as only a part of the firm's incoming freight is handled at this point. The clerk's office is at A.

The alley is divided centrally by a passageway, or rather a crossing connecting the store across the alley, and over this there is a continuous stream of people passing. On this account this point is kept free of vehicles at all times. The stories above are connected by a bridge.

Just south of this crossing is an opening or hole in the wall of Carson-Pirie's into which the motor trucks of this firm back for unloading, as shown in Fig 1. The photograph C shows this part of the alley more in detail. Fig. 3 shows the general arrangement partly in section of all three of the delivery platforms of this firm.

Carson-Pirie's Platform

At 5 is shown the first platform, the bridge overhead showing just over the crossing. At 4 the motor truck is shown backed into the hole just mentioned. At E next to it, is an elevator from the shipping room below. Next to it, and projecting into the alley, is the platform (3) on which is handled bulk goods and freight for the warehouse. This is roofed over and floored with concrete. A large door at E in the drawing opens to a second elevator which may be summoned by a bell at the right of the door at any time. This large elevator serves this platform 3. The photograph D shows this plat-



A—HEYWORTH BUILDING, CHICAGO, HAS 13-FOOT ALLEY ENTRANCE

B—ONE OF CARSON, PIRIE, SCOT T & CO.'S LOADING PLATFORMS SHOWING ITS ARRANGEMENT

form and a team F blocking the alley in backing in.

From the shipping room in the basement a passage runs under the alley as at T, connecting with the book and stationery building of this firm across the way. In the basement of this building is handled most of the express business, and this work is sent out from platform 2 shown in the foreground of the drawing.

Across the alley from the platform 3, as shown in Fig. 1, and at G in photograph D, is a small projecting platform used by the Blue Teaming Co. Here wagons stand during the day awaiting call on contract hauling. Some of them stand all day without moving from the platform. At other times all the wagons will be working. These vehicles when all together often block the alley to a very large extent. The photograph D shows the alley completely blocked for the moment by a two-horse wagon in the act of backing in to the platform, 3.

Congestion in Alley

Beyond this wagon is seen on the right the outlet to the alley at this end—but 13 feet wide—while at the center of the picture just behind the wagon stand the vehicles of the Jevne Grocery Co. A closer view of this platform is seen in photograph E, showing how the horses projecting out obstruct the alley at an important point. The space left leaves room for but one wagon to pass. The wagon at B in the photograph is waiting until the wagon at A gets in before it can proceed.

The Jevne platform location is indicated in Fig. 1. This firm uses several motor trucks. On one occasion, timed by the writer, the motor vehicle after loading waited 15 minutes before it got a chance to move out from this platform. The driver stated that this was about the average time. Often waits of 30 minutes occurred. This delay was partly due to the turning radius of the trucks, requiring backing in order to get out.

In the photograph B is one other indication of a source of congestion in this alley; i. e., the express wagon at the right. Some eight to ten of these wagons arrive in the alley from 11 a. m. to 2 p. m., and many of them, after backing into a vacant space, stand there until 5 or 6 p. m., while the drivers make the rounds of the buildings.

Problems of the Drivers

The drivers have their own problems to meet, especially in such places as the Heyworth building. Here they go from floor to floor collecting parcels. At each floor instead of using the time to call the elevator for each shipment, they stack the packages collected. At the next floor the same thing occurs until the building is covered. Then they take the elevator for an entire trip and collect their packages at each floor as they come down. This has resulted in the loss of many packages by theft since there is no one to watch them as they lay by the elevator door. The risk is due largely to insufficient freight elevator service.

Thus are pointed out some of the more glaring alley difficulties at this point, merely as an object lesson of conditions obtaining in a greater or less degree at other alleys in all our larger cities. Motor trucks will remedy much of the congestion, but these cannot be used successfully until the systems in the buildings themselves allow of a quicker delivery and shorter stops.

An indication of the amount of traffic on a light day in this alley is given by the following census at consecutive hours:

11 a. m.—Two-horse, 24; one-horse, 14; 3-wheeled van, 1.
12 M—Two-horse, 5; one-horse, 9; 3-ton electric truck, 1.
2 p. m.—Two-horse, 5; one-horse, 9; motor trucks, 4.
3 p. m.—Two-horse, 12; one-horse, 8; motor trucks, 3.

These figures indicate only the number of standing vehicles at these times as between the hours many other vehicles came and went.

BUILDING TRUCKS FOR PACKERS

Motor trucks are now being built for Swift & Co., Chicago, at the Union stock yards, the first machine built at the works having been in operation for about a month. Swift & Co. are operating over a dozen motor trucks, and in their own repair shop have rebuilt a number of machines of out of date construction, bringing them up to the standard required at present. The success in rebuilding led the Swifts to consider the assembling of their own motor trucks for their own work, it being planned that an addition would be made to the repair shop to take care of the work.

Finally, however, a different arrangement was made and the building of the machines put in the hands of the Mechanical Mfg. Co., a firm situated near the Swift plant and engaged in the manufacture of all kinds of machinery used in the packing business from hand trucks for loading platforms to railway bumpers for the tracks. By placing the work in the hands of this firm the truck can be put on the market for general sale and it is expected that this will be done within a few months.

The machine is of 4-ton capacity and in appearance and general dimensions closely resembles the Packard. The mechanical details, however, differ considerably. The motor used is a Continental 40. A Brown-Lipe gearset of generous dimensions is used and placed amidships. The whole rear end is Timken. The axles and jackshaft are of Timken construction, these constructions being so well known that no further description is needed.

Results so far have made the users very well satisfied with it. The driver is the same who is so well known for his skillful handling of the reins at horse shows in showing off Swift's prize four-horse team. Since he leaves the truck at show times to drive the prize team and at other times prefers the motor one might see an indication that the highest class drivers are open-eyed enough to see the advantage of the motored machines and to join early with their coming, sticking to the horse only for special occasions.

Ten more of these motor trucks are under construction and it is expected will be finished for Swift & Co. within 3 months. Once the packers are supplied the machine, it is understood, will be put on the open market.

Transportation Delays at Terminals

Editor's Note—This is a digest of a paper read by David Beecroft at the meeting of the National Association of Automobile Manufacturers held at Detroit, Mich., November 14-15.

OF 287 motor truck and horse wagons checked at railway and steamboat terminals in the cities of New York, Chicago and Detroit it was discovered that these vehicles had an average delay of 11.3 minutes from the time they reached the proximity of the freight terminals until they reached the unloading platform and were ready to begin unloading or loading operations.

Figures taken of the length of time required for these 287 vehicles to unload or load showed an average of 27.3 minutes each so that roughly speaking each vehicle waited almost half as long to get to the loading or unloading platform as it required to perform the loading or unloading. This loss of time cuts down the efficiency of the motor truck as well as that of the horse vehicle. The operator of horse vehicles does not object seriously to this loss in time or delay waiting to reach the loading platform because the horse has to be rested and this offers a good opportunity; on the other hand with a motor truck it is different in that the truck does not need a rest so that every delay of this nature reduces the amount of work it can do per day and correspondingly reduces its efficiency.

The length of delays at loading platforms varies, due to differences in population, differences in street widths and differences in the methods of handling traffic at the freight depots. Of the three cities, New York, Chicago and Detroit, the last named experienced the least delay. Of forty-two vehicles checked in the city of Detroit the average delay at one railway freight terminal was 3 minutes and at another 4.4 minutes. This difference in time was due to narrower approaches at one than the other.

Chicago averages better than New York in the reduction of time lost at terminal depots. Of three leading Chicago freight terminals in investigations extending over 3 successive days, the average delay at one depot was 6.2 minutes per vehicle, at another 11.7 minutes, and at the third the amazing figure of 25 mniutes. In contrast with this are the figures taken from three New York city dock terminals based on observations extending over a similar period. In one the average delay was 9 minutes, at a second 10, and at a third 15.5.

While these averages do not appear abnormally high they invariably represent a high ratio with the time required to unload. This was demonstrated at one Chicago depot where the average delay was 25 minutes and the average unloading time 24 minutes so each vehicle waited longer to get the chance to unload than was required in the unloading. At another Chicago depot the average delay was 11.72 minutes and the average unloading time 23.74 minutes, giving a delay-unloading ratio of 1 to 2. In New York at one of the docks the average delay was 10 minutes and the average unloading time 19 minutes, which is more than a 1 to 2 delay-unloading ratio.

The investigations in all three cities showed that at certain periods of the day it is possible to so conduct traffic that little delay is caused. Between the hours of 7 and 8 in the morning 75 per cent of the vehicles do not meet with delays, whereas at later periods in the day the maximum delays in Chicago range from 30 to 79 minutes and in New York city from 43 to 130 minutes. With vehicles held up for over 2 hours waiting to unload and being able to unload in less than 30 minutes it is impossible to get that efficiency which modern transportation demands.

But all of the loss of time or delays at freight terminals whether in connection with railroads or steamboat docks is not due to lack of capacity, lack of system is a big factor in many cases. Quite frequently at railroad terminals there is not a sufficiently large executive force to issue the bills of lading as called for by the teamsters. Often twenty-five to forty teamsters are seen lined up waiting for such documents and some of them have had to wait more than 1 hour for them. In the meantime their wagons or motor vehicles are standing idle in the freight depot, not only losing money for its owner but aiding in a general congestion of the place and so holding up the entire system. If a modern bank were as poorly equipped with clerical force as some of the railroad depots are it would be impossible for it to transact its business even if the hours were extended from sunrise to sunset.

Often the system of handling freight within the depot, that is from the time it is unloaded off the wagon or motor truck until it is loaded into the freight car, causes much delay to the motor truck. In some depots all freight is handled within the building on hand trucks and long delays are caused when motor trucks are unloading by the freight handlers having to wait for more hand trucks. The more enterprising railroad companies are already endeavoring to correct this abuse and have adopted an application of motion study to the method of working the men and the hand trucks. This aims at the man having a full hand truck load not only from the motor vehicle to the freight car but also from the freight car back to the motor vehicle. Enormous savings of time have been accomplished in this way.

Hand in hand with this motion study improvement is that of a new scale of payment for freight handlers based on a stated salary and in addition a commission on all freight handled above a determined point. In this way the freight handler aims at working expeditiously because he profits directly in proportion to the amount of work done.

To demonstrate that it is possible to hasten the unloading time and also the loading time at terminal depots, one has but to look at the special facilities for handling perishable goods. Often not one-quarter of the time is required for handling these goods as compared with that required when handling regular freight. The employment of system will greatly ameliorate the present difficulties. To show firmly the railroad companies are convinced of this we quote from a leading Chicago freight terminal superintendent, who states: "If motor trucks were used exclusively at six of the big terminals of Chicago the work could be done in one-half the time and at one-third the cost. This would mean a saving in Chicago transportation at these six depots of $4,320,000 per year."

One of the greatest obstructions to the reduction of delays at present is the driver of horse vehicles. He generally is in sympathy with the delays and often actively assists in causing them. Recent observation showed traffic jams in the city of Chicago where 155 to 175 vehicles, mostly horse trucks and some motor trucks, were held for 1 hour 20 minutes. The blockade was finally broken up by mutual consent of the drivers and was accomplished in less than 5 minutes.

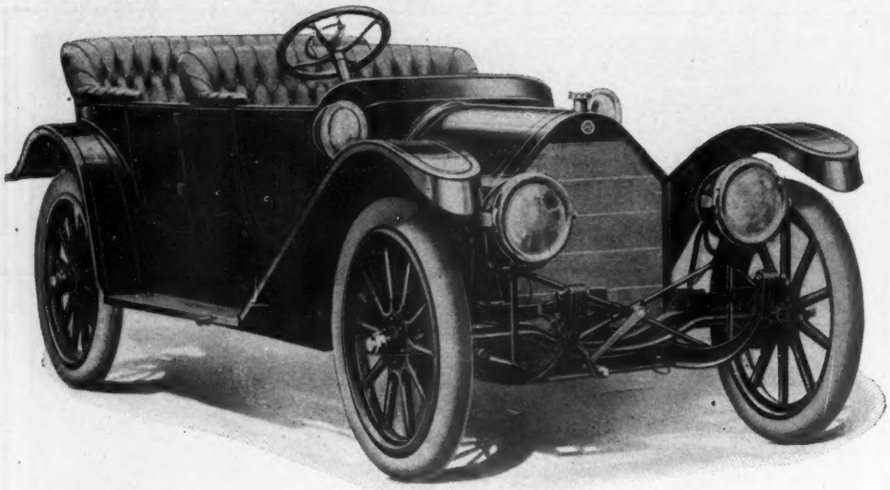
E—BLOCKADE CAUSED BY HORSES AT SOUTH END OF ALLEY. THE HORSE AT B IS WAITING UNTIL WAGON A GETS IN BEFORE IT CAN MOVE

C—SHOWING WHERE CARSON-PIRIE SUBSTATION TRUCKS LOAD AND ELEVATOR FOR LOADING FROM BASEMENT

D—WAGON BACKING INTO CARSON-PIRIE PLATFORM BLOCKS ALLEY COMPLETELY WHILE UNLOADING

Regal Underslungs Continued Unchanged

Minor Details Show the Only Differences in Models T, N, and H for 1913



THREE-QUARTERS FRONT VIEW OF REGAL UNDERSLUNG 35

WHILE still wedded firmly to underslung frame suspension, to meet the demand for a car of standard construction, the Regal Motor Car Co., Detroit, has added to its line of four underslung cars a new model, which has the frame suspended over the axles.

This new model, styled model C, is a five-passenger touring car, which will sell at a popular price. A new motor has been designed for this model, and the body is of a type new to Regal practice. The other models are continued from last year with only minor changes. These are made in two chassis types, models T and N being on the smaller of the two, and models H and S on the larger. These are both of four cylinders, and differ chiefly in size. The policy of the Regal company is against radical changes in its yearly models. Improvements are made in the regular models, without regard to season, and announcement is made at the time the change goes into effect.

New Motor Described

The new model is equipped with a four-cylinder monobloc motor, with exhaust passages integral, 4 inches bore and 5 inches stroke. The crankshaft is carried on three bearings, as is the camshaft. Valves are all on one side, situated side by side. The crankcase is divided horizontally, the upper half carrying the bearings and supports, while the lower carries the oil reservoir. The motor is mounted at four points by integral arms, direct from the main frame. Cooling is by means of a centrifugal pump, and an adjustable belt-driven fan. Lubrication is by the constant-level, circulating splash system, and ignition is by means of a dual magneto and storage battery.

New Frame Location

The clutch, gearset, axles and springs are very similar to those used on the former Regal models. The frame is of channel steel, differing from former frames of this product in that it is overhung instead of underslung. The chassis views at the bottom of the page will illustrate this difference. The general lay-out of this chassis otherwise bears close resemblance to that of the underslung types, as is shown in the lower illustration opposite. The overhung frame not only permits the motor to be suspended direct from the frame, but allows the use of three-quarters elliptic springs.

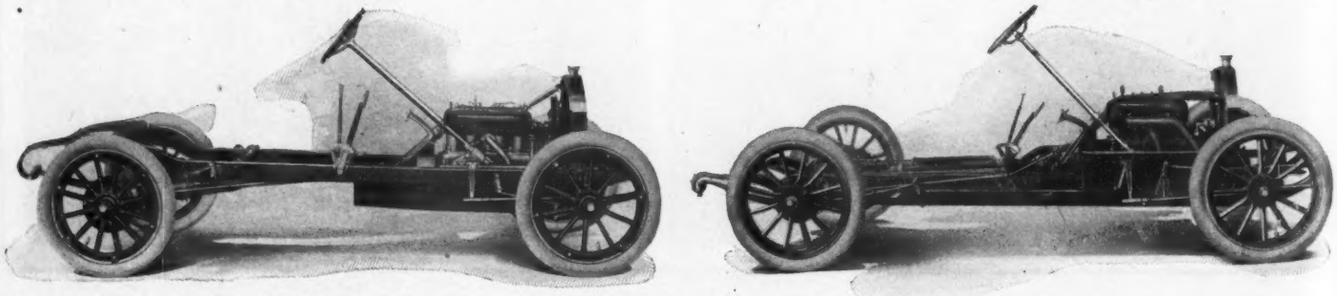
The body represents a good example of the modern trend of motor car coachwork. A wide band extends about the gunwhale of the car, finished in a light blue, while the rest of the side panels are in a darker shade of the same color. A moderate cowl is placed over the dash, and ample leg-room is provided in the tonneau. This model is regularly equipped with a top, windshield, speedometer, electric lights, electric horn, demountable rims, tire irons, foot and robe rails and a kit of tools.

Model T, the small underslung model, is a truly Regal product, and differs little from present models. In brief, this model both this year and for the coming season has a wheelbase of 100 inches, with 32 by 3½ tires on demountable rims all around. The cylinder sizes are 3¾ by 4½ inches. They are cast in one piece. The valves are located on one side, and are both operated from the same camshaft. Their mechanism is completely inclosed by sideplates to exclude dust and to muffle their sound, but which are removable by taking out two thumb screws for the purpose of adjustment and cleaning. The crankshaft is supported on two die-cast bearings. Connecting rods, crankshafts and camshafts with integral cams are drop-forged and heat-treated.

Pistons are of hard grey iron. The crankcase is of the barrel type, of cast iron, and mounted at four points to a subframe, secured in turn to the main frame at four points. Lubrication is by the circulating splash system. The connecting rods, wrist pins and cylinders are lubricated by splash from the crankcase. The level in this chamber is maintained at a constant level by overflow passages, through which the excess drains into a reservoir below. A plunger pump takes it from here to a sight-feed on the dash, whence by gravity it is fed to the main bearings, overflowing into the crankcase. Dual ignition is used, current being taken from a magneto and from a dry battery in starting.

Distinctive Driving System

A special feature in the construction of this model is the driving system. The clutch is of the leather-faced cone type, made of aluminum, and very light in weight. The gearset is located on the rear axle, and the driveshaft is connected to it on practically a straight line, two universal joints being used. The complete propeller shaft, except directly behind the



REGAL MODEL S AND T SHOWING DIFFERENCE IN FRAME SUSPENSION

New Overhung Model for Conservatives

New Chassis Similar to Older Models With Exception of Suspension Plan

clutch, is housed in a steel tortion tube. The gearset affords three speeds and reverse and operates on the selective principle. An interlocking device is embodied in the control of this member, which makes the engagement of more than one gear at a time impossible.

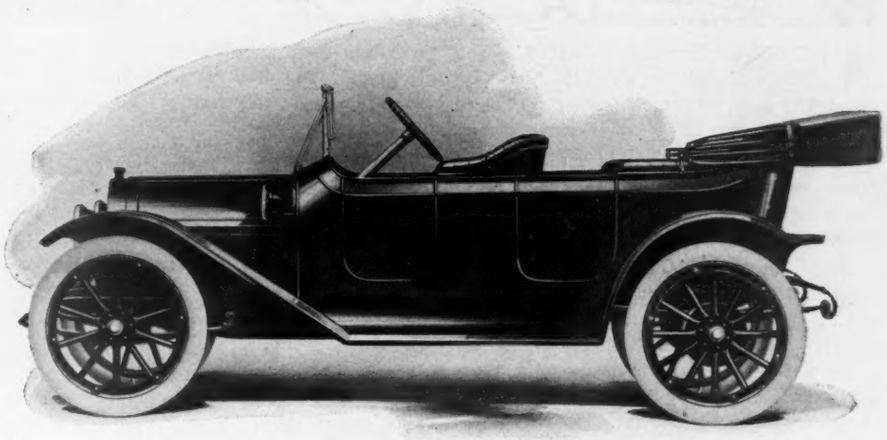
The rear axle is of the semi-floating type, propulsion being through the tortion tube. The rear springs are perched beneath the axle and are of the half-elliptic type. The main frame is entirely underslung, and the subframe is of the tubular type. The front axle is of the I-beam type.

Steering is by a worm-gear mechanism, through a 16½-inch hand wheel, on the right side of the car. The control levers are placed at the right of the driver, inside the body. Spark and throttle control is by levers on the top of the steering wheel, with a foot accelerator, and clutch and brake controls are in the form of the usual pedals. The front floor boards are aluminum covered, and removable for inspection and adjustment.

The body seats four passengers. The seats are tilted, affording a comfortable position, and permitting a slightly lower body, with the same amount of leg-room. For 1913 the body of this model is slightly longer than this year and trimmed with nickel-plated fittings. Especial attention is called to the fact that, owing to the low suspension, made possible by the underslung frame, ingress and egress are greatly facilitated.

Roadster Body Improved

The model N roadster is built on the same chassis as the touring car, differing in the angle of the steering column, location of the gasoline tank and the body. The body lines on this model have undergone slight improvements over those of this year. The position of the seat remains the same, but the back has been given more curve, and the seat has been carried higher. Just at the rear of the seat is an oval 20-gallon tank, and from the rear, in a graceful curve, the cover of the toolbox extends back. In this are contained the tools, supplies and the lighting battery. The rear springs on this model have been lengthened to 52 inches.



NEW REGAL MODEL S, A STANDARD MODEL

Model H is the first of the underslung family of Regals. It is a 35 horsepower model with four cylinders, 4¼ by 4½, with the cylinders cast in pairs. The general mechanical features are similar to those of the larger model with the exception of the cooling, which is by thermo-syphon system. This system is made quite practical for so large a motor, it is asserted, by the depth of the radiator made possible in the underslung frame construction.

The general chassis design is very similar to the smaller model, except as to size and added strength. It is furnished as a five-passenger touring car.

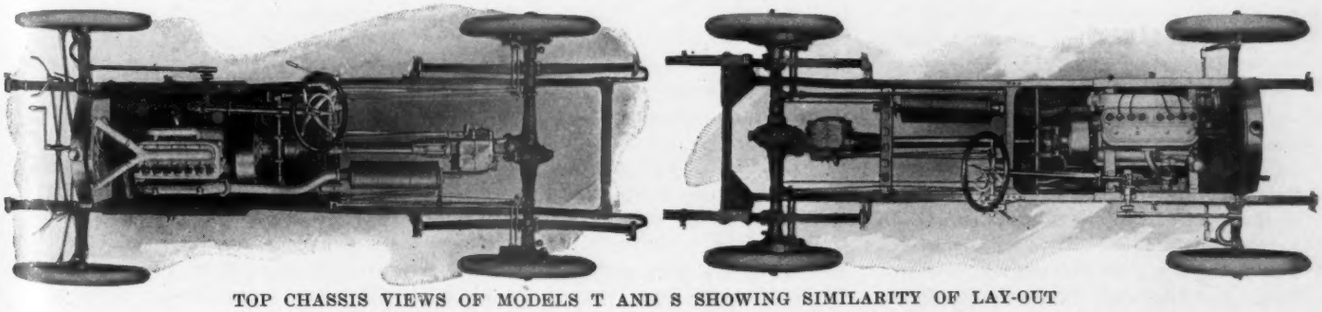
The fifth Regal model is the coupe, which is built on the roadster chassis. The body dimensions are similar to those of the roadster, differing in that it is completely inclosed by a colonial coupe top.

The Motorists' Bookman

Autocar Road Book, Vol. 3

THIS volume is prepared and presented in the same style as its predecessors, Vol. 1, south of the Thames, and Vol. 2, north and South Wales and west Midlands. Vol. 3 deals with East Anglia and East Midlands—also including parts of Lincolnshire—which, of course, covers the section traversed by the Great North road as far as Newark. Information is given regarding a route by which motorists traveling north or south, desiring to pass to the east of London, may do so, thus avoiding the necessity of going through that city's crowded thoroughfares. The volume is well indexed and a pocket in the back cover contains an excellent route map on fine heavy white linen, the markings and lettering in black being very distinct, while the mileages are shown in red. On the same sheet are maps of the exits from London to the north and northeast, and from the city of Norwich. Published by Methuen & Co., Ltd., London, W. C., Eng. Price $1.85.

Of vest-pocket size, "Rubber Facts and Figures," published by F. C. Mathieson & Sons, London, Eng., contains particularly valuable information for those who are looking for statistical information on the rubber industry. In tabulated form it not only gives data as to the formation of the various rubber companies, shares issued, head offices of companies, but includes the acreage planted to rubber trees, approximate number of trees and number being tapped, amount harvested for 4 years, the dividend paid for the years 1909 to May, 1912, and the monthly outputs during the same period of time.



TOP CHASSIS VIEWS OF MODELS T AND S SHOWING SIMILARITY OF LAY-OUT

Among the Makers and Dealers

WESTCOTT Increases Capital—The Westcott Motor Car Co. has increased it s capital stock from $250,000 to $350,000.

May Go to Detroit—It is said that the Globe Seamless Tube Co. has been seeking a factory location in Detroit for some time.

New Duquesne Out—The Pittsburgh Gage and Supply Co., of Pittsburgh, builders of the new Duquesne car, turned out its first finished machine on November 30. It is a four-cylinder, five-passenger touring car. On January 1 the first six-cylinder car will be turned out.

May Need Two Buildings—The Syracuse Automobile Association, of Syracuse, N. Y., announces that the next show will begin Tuesday evening, March 18, and the main show will be held at the Armory. If the number of exhibitors warrants it the Alhambra will also be engaged and two shows held, as last year.

International Commerce Report—International commerce will make a new high mark when the figures for 1912 have been compiled, covering the foreign business of all the nations on earth. Present indications point to at least $35,000,000,000 as the gross amount. This compares with $31,000,000,000 last year and represents an increase of 100 per cent in 22 years. Foreign business in motor cars is reckoned at about $50,000,000.

Miller Reorganizes—The Miller Carbureter Co., which moved some time ago from Los Angeles to Indianapolis, has been reorganized under the name of the New Miller Carbureter Co., which has been incorporated with an authorized capitalization of $200,000. Those interested in the company are Frederick C. Fairbanks, South Pasadena, Cal.; Richard M. Fairbanks, Indianapolis; L. H. Colvin, Cincinnati; O. L. Snyder, Cincinnati, and N. M. Doyle, Indianapolis. The company may establish a new plant at Speedway, the new horseless city, northwest of Indianapolis.

New Cincinnati Firm—Cincinnati is to have a new company to manufacture cars. The Northway Motor Car Co., which was just recently incorporated in West Virginia, with a capital of $600,000, will begin to produce machines about the middle of December. The chamber of commerce is now making an effort to find a suitable location for the company. It is said that if this cannot be accomplished an entirely new structure will be erected. Ralph Northway, of Wyoming, O., will be at the head of the big corporation. W. D. Furste, Edward Deckebach of Cincinnati, F. W. Enslow of Huntington, William Pabodie of Hartwell, O., and Ralph Northway are the incorporators. It is planned to employ 200 men at the beginning. No name has been selected for the car. at the present time.

Denial by C. F. Pratt—Rumors that C. F. Pratt, formerly of the Ohio Motor Car Co., would become vice-president and general manager of the Ames Motor Car Co. are denied by Mr. Pratt. Instead Mr. Pratt is vice-president and general manager of the F. A. Ames Co., another of the Ames group.

New Orleans Chooses March—This year's 5-day New Orleans show will be held March 20-24, it has been decided by the dealers' association after the minority had worked hard for an earlier show. It was decided also to hold two shows each year beginning with 1913. The second show next year will be held in November and will be made an annual feature.

May Choose Indianapolis—In all probability the company being organized by V. F. Whitesides to manufacture a light truck, to be known as the Ironsides, will be located in Indianapolis. Whitesides has announced that he will not consider a proposition to locate in Newcastle, where he was formerly identified with the Whitesides Commercial Truck Co. It is thought the new company will be incorporated and the factory ready for operations early in the new year.

Shortage in Steel Reported—A country-wide steel shortage is having its effect on north end motor car factories in Flint, Mich., it is said. Notice has been received from the steel mills that in order to get delivery on steel it will be necessary to place orders from 6 to 8 months in advance of the date the material is desired. Many of the Flint concerns, such as those manufacturing bodies, radiators, rims, axles and sheet metal parts, have been forced to turn down orders through inability to deliver before next year. It is said the steel shortage is due to the great number of new buildings going up throughout the country.

Haynes Makes Address—The Transportation Club of Indianapolis was entertained on the evening of November 26 with an address on the development of the motor car by Elwood Haynes, of Kokomo. Mr. Haynes told how he conceived the idea of bringing out his first motor car. He said he was engaged in the natural gas business and was forced to make long drives, using a horse and buggy. This caused him to wish for a horseless vehicle. He carefully weighed electricity, steam and gasoline as a propelling power and decided to experiment with gasoline. His motor was built by the Kokomo Machine Works, and the first Haynes car, which is now in the Smithsonian Institution at Washington, ran with considerable success.

Show for Northern Iowa—The second annual northern Iowa show under the auspices of the Fort Dodge Dealers' Association is to be held February 26-March 1.

Invading Canada—The Rutenber Motor Co., of Marion and Logansport, Ind., has purchased a factory at Chatham, Ont., in which to manufacture motors for the Canadian trade. W. Bowen, of the Bowen Mfg. Co., of Auburn, N. Y., has been placed in charge of the Canadian plant.

Dealers to Become Bankers—A number of men identified with the motor industry of Boston, headed by Alvan T. Fuller, of the Packard, and John H. MacAlman, president of the Boston Automobile Dealers' Association, have asked the secretary of state of Massachusetts for a charter to do business as a banking and trust company in the Allston district where the big Packard plant is located.

Tire Company Changes Presidents—At the recent annual meeting of the Pennsylvania Rubber Co. Herbert DuPuy retired from the presidency in favor of H. Wilfred DuPuy, who was elected to that office, while still continuing as treasurer of the company. The new office of chairman of the board was created, to which the retiring president was elected. Re-elected to continue in their same offices as formerly were: Charles M. Dupuy, vice-president; Seneca G. Lewis, general manager; George W. Shively, secretary; Charles G. Morrill, assistant treasurer. The readjustment of offices involves no change in the general conduct of affairs.

May Change Classification—The meeting of the southern classification committee will be held in Washington this week and among the subjects that will be considered will be the contemplated changes in the classification of motor cars shipped over southern railroads. The plan proposed by the railroads is to raise the classification of motor cars to double the present rates and to cut down the minimum carload requirements to half the present weights. If adopted the new rule would work a big hardship on the motor car shippers. As an illustration of its working it may be said that where, for instance, the rate applying between certain points is $1 per 100 pounds with a minimum weight per carload of 10,000, the cost of shipping a car weighing, say, 7,000 pounds would be $100. This is reckoned on the minimum weight at full tariff. If the classification shall be raised to double first-class, or, say, $2 per 100 pounds, with a minimum weight requirement of 5,000 pounds, the shipper would have to pay $140. Of course, if the

motor car weighed only 5,000 pounds or less, the cost of shipment would be the same as it is at present.

Making Chassis for the Trade—The Nichoalds Co., of Detroit, Mich., in the parts business, has gone into the manufacture of the chassis for the trade.

To Make Differential Device—The Gearless Differential Co. has been incorporated in Detroit with a capital stock of $20,000 to manufacture a patented differential device which is claimed to do away with gears for this part of the rear axle. A system of ratchets and rollers is employed. The incorporators are Frank Howarth, G. D. Bailey and W. N. Trudeau.

Providence Show Plans—The plans of spaces for the annual show at Providence, R. I., are out and it provides for 126 spaces divided into two sections, one for pleasure cars and the other for commercial vehicles and accessories. The show will start January 25 and continue until February 1 and it will be under the direction of the Rhode Island Automobile Dealers' Association.

Tone to Build Cars—The Tone Car Co. has been organized and incorporated in Indianapolis with an authorized capitalization of $200,000 to manufacture a line of pleasure cars to be known as the Tone. A factory probably will be established at Speedway, the horseless city. Those interested in the concern are Fred I. Tone, M. H. Miller and William P. Kirk.

New Remy Branch Announced—Gerald Fitzgerald, who has for some time been assistant manager of the branch of the Remy Electric Co. in Chicago, will on January 1 assume the position of branch manager of the factory branch of the Remy Electric Co. to be opened on that date in Minneapolis, Minn. Mr. Fitzgerald will have as his assistant M. C. Kent, also of the Chicago Remy sales force.

Change of Name—On account of similarity to the names of other manufacturers, the Ideal Commercial Car Co., of Akron, has deemed it advisable to change the name of the concern to the Akron Motor Car and Truck Co. The company has recently moved into its new plant, where it has several times the floor space that it had in the old plant, and its facilities for increased production are thereby greatly enlarged.

Willard Still Expanding—The Willard Storage Battery Co., which recently purchased the property adjoining its plant No. 1, affording it 50,000 feet of additional manufacturing space, also has acquired the plant next adjoining it, a building of brick and steel construction, with 32,500 feet of manufacturing space. This furnishes the Willard company with four separate and distinct plants, all conveniently located, close together, but in no way connected. Three are already individually equipped for the manufacture of storage batteries and the most recent purchase is intended to provide for future expansion.

Mineter With Rayfield—N. H. Mineter, who for several years has been sales manager of the Stromberg Motor Devices Co., has resigned his position with that concern and is now associated with the Findeisen & Kropf Mfg. Co., of Chicago, as factory sales manager.

Making Cars in South Bend—The South Bend Motor Car Works, 2101 South Main street, South Bend, Ind., manufacturer of cars, has been incorporated with a capital stock of $10,000. The directors are John D. J. Farneman, Alfred C. Mechlenburg and Hilton Hammond. The company has just recently placed on the market a six-cylinder 45-horsepower car with a 128-inch wheelbase. The incorporation papers were filed with the secretary of state at Indianapolis.

Change in Detroit Concern—The Detroit Motor and Machine Co. has incorporated with $150,000 capital stock, the incorporators being Hal Smith, attorney; Frank W. Blair, president of the Union Trust Co., and H. J. Hayes. Of the capital stock $75,000 has been paid in and the remainder has been represented by property. The incorporators divide the 750 shares of stock equally. The company has operated a machine shop at the foot of Hillger avenue for years and the new incorporation marks a partial change in ownership, together with an increase in the amount of capital.

Guayule Industry Disturbed—The Guayule rubber industry is much disturbed over the activity of Mexican outlaws who are operating upon a number of ranches from which the guayule shrub is obtained, under the guise of rebels. Advices have reached Torreon that the Cedros ranch, embracing 2,000,000 acres, situated in the state of Zacatecas, which is a subsidiary of the Intercontinental Rubber Co. of New York, has been taken repossession of by these pillagers and that the manager and all foreign employes of the property were forced to flee for their lives. The Cedros ranch is the chief source of supply for the large crude rubber factories of the Intercontinental Rubber Co.

New York Concern in Trouble—A petition in bankruptcy has been filed against the Knickerbocker Brass Goods Co., of New York, capitalized at $50,000, and Henry C. Quinby has been named receiver. The company has liabilities amounting to $40,405 and nominal assets of $47,620. These consist of inventory, $2,000; accounts, $4,553, and claims against the United States Motor Co. and the East Side Metal Spinning Co. for about $20,000, each based upon alleged breaches of contracts. The company has been in financial difficulties for some time and foreclosure on its machinery by virtue of a chattel mortgage left a deficiency of $2,000 Claims of the United States Motor Co. and the East Side Metal Spinning Co., amounting to $21,000, either are in litigation or are disputed.

Matheson Hub Branch Closes—The Matheson Automobile Co. has closed its branch in Boston, which was opened by the company more than a year ago, when it took over the agency conducted by Roy Faye. This will throw on the market a fine service building, one of three on Commonwealth avenue, forming a large structure and occupied by the Winton the center and the Locomobile at the other end.

New Canadian Enterprise—Another sign of the wave of prosperity in the maritime province is the notice of incorporation that appeared recently of the Maritime Motor Car Co., Ltd., at Goldbrook, N. B., capitalized at $250,000, for the purpose of manufacturing a medium weight, high-grade, six-cylinder car. The factory, which is almost completed, will have a capacity of over 1,000 cars a year and will cover more than 2 acres of ground, it is declared.

Leverton Cartercar Manager—A. C. Leverton, formerly with the Brush Motor Co., of Detroit, has been appointed general manager of the Cartercar company, succeeding J. J. Hartley, who has been transferred to Philadelphia. A. Lehr, recently with the Studebaker Corporation, has succeeded H. D. Evans as purchasing agent, while W. D. Block, of the General Motors Co., hereafter will be comptroller of the Cartercar plant. E. J. Farkas, engineer of the Cartercar, has left and has opened offices in Detroit.

New N. A. A. M. Bureau—The National Association of Automobile Manufacturers has installed its new car service bureau at Detroit, according to announcement made by James S. Marvin, traffic manager of the association. The purpose of the new bureau is to facilitate the efforts of car makers to secure a supply of freight cars during the shipping season. The methods to be used will be largely precautionary. For instance, when a shipment of motor cars leaves the manufacturing center, the numbers of the cars are listed together with their ownership and official designations. This list is forwarded to the railroad which will make delivery of the freight with a letter requesting the terminal road to protect the cars and to see that they are promptly returned to the railroad from which the shipment originated. A system of daily car reports has been instituted, which will show the location of motor car freight cars and thus tend to decrease demurrage and delay. It has been found that fully 30 per cent of the inefficiency of motor car freight cars arises from the withholding of foreign cars by terminal railroads under the present unsatisfactory system of demurrage. The association hopes to decrease this percentage to a material extent by the operation of the car service bureau in the near future.

Development Briefs

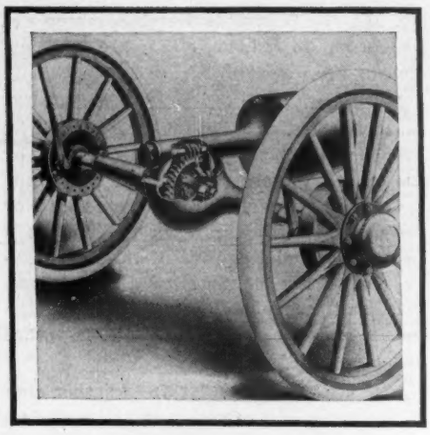


FIG. 1—HINDLEY WORM-DRIVE AXLE

Avery Reversible Electric Lamp

AMP filaments are liable to burn out at any time and for this reason are not to be greatly relied on for tail lights if used alone. It is inconvenient to carry extra bulbs, as they must be stored in a safe place, which means an inaccessible one. To run without the tail lamp lighted is to court legal trouble, and for this reason many motorists whose cars are equipped with electric light prefer to use oil tail lamps to be on the safe side. The Avery Portable Lighting Co., Milwaukee, Wis., has brought out a new bulb that eradicates this objection to electric tail lights. This lamp has two independent filaments secured to two separate socket plugs. Upon one filament burning out the bulb may be reversed and the other end inserted in the socket.

New K-W Lighting Magneto

The K-W Ignition Co., Cleveland, O., has produced the lighting magneto shown in Fig. 3. It is similar to former K-W magnetos, except that it employs three magnets instead of four. The new model is known as model LS. It will light two 16-candlepower headlights at speeds of from 900 to 3,000 revolutions per minute.

Only one moving part is employed, the rotor, and no commutators, sliding contacts, or brushes are employed. In the usual construction a wound armature is employed which necessitates collector rings and brushes, or a commutator to convey the induced current to the exterior connections. This is eliminated in the new generator by employing a spirally wound coil, C, in Fig. 4, between the inductors, I I. This coil is wound with copper ribbon, the extremities of which winding extend up between the magnets, and out to binding posts at the end of the magneto. The magnet poles extend down to the base of the instrument, the rotor revolving on ball bearings between them. The complete magneto, coil, etc., is completely inclosed and waterproof.

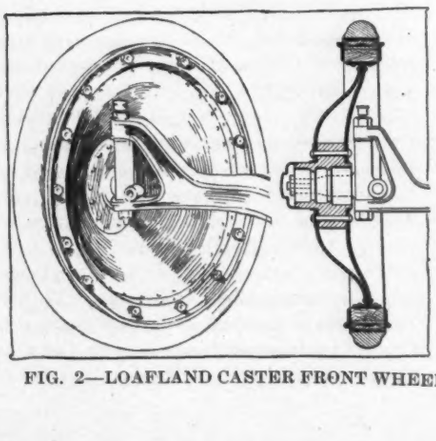


FIG. 2—LOAFLAND CASTER FRONT WHEEL

This magneto is, of course, of the low-tension type, intended for lighting only, but can be furnished with a coil for ignition purposes, if desired. In application, it is usually driven by a friction wheel on the end of the armature shaft, from the flywheel, which gives about the right speed for lighting work. With the inclosed flywheels that are found on many of the new motors, this application is not practicable, a pulley being substituted for the friction wheel, and the magneto driven by a belt from the fan pulley. As shown in Fig. 3, a special spring bracket is fitted to the magneto frame, which serves to keep the friction wheel in contact with the flywheel, or to keep the belt taut.

Loafland Steel Caster Wheel

Caster wheels have become so familiar to most motorists that they need no introduction, their advantages of ease of steering, even wear on the king-bolt, safety, in case of the breakage of a steering connection, and lessened strain on these connections, are well known, and need no explanation. Several types of caster wheels and axles have appeared, from time to time, one having been adopted by a prominent manufacturer of pleasure cars. The majority of these devices, however, have been designed for light cars, and their application to motor trucks has not been seriously contemplated. That their utility in this use is quite as great as in high-speed pleasure-car use has been realized by the Indestructible Wheel Co., Lebanon, Ind.

This company's wheel is constructed of pressed steel, in two disks, flanged at their outer peripheries, and riveted to the wood felloe of the wheel. Their inner ends are likewise riveted to a metal hub, which is wholly outside of the wheel center. The axle and steering arrangements are exactly similar to standard, except that the king-bolts are in horizontal line with the wheel centers. They are slightly ahead of the vertical centers of the wheels, though, thus castering naturally. In motor trucks the tendency of the front wheels to spread on their spindles, i. e., to widen at the bottom, is more marked than in pleasure vehicles, due to the great weight that is borne by the steering spindles when off-center, as in usual practice. By placing them in the center of the wheel this strain is almost entirely vertical, and there is hence no constant tendency to break down or bend the steering knuckles, as in standard construction. Another point that should receive more attention from truck makers and users than those of pleasure cars is the abnormal wear on tires, imposed by the usual steering arrangement. Metals are fallible, and the majority of trucks on the street have their front wheels badly out of line because the position of the king-bolts requires that mechanical means be employed to hold them in line, while with the caster wheel this position is automatically maintained, and the wheels exert no strain on the connections counter to a true running position. Tire wear is greatly augmented by poor wheel alignment, and for this reason a caster wheel is to be recommended for trucks.

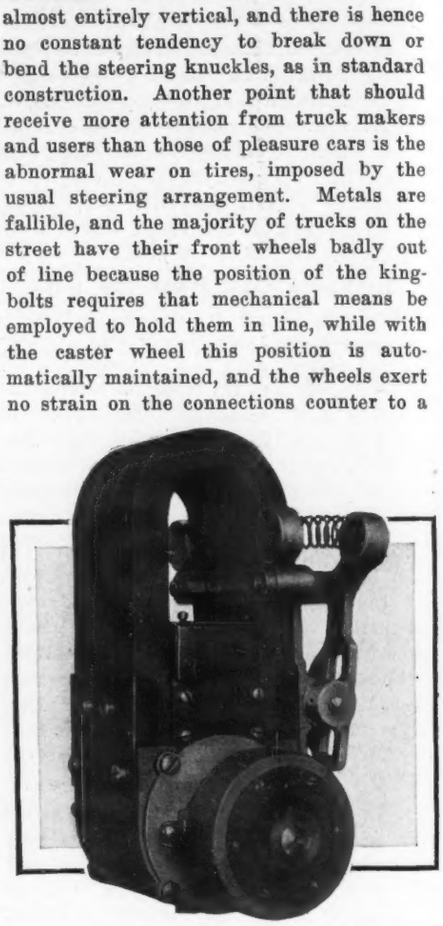


FIG. 3—K-W LIGHTING MAGNETO

Fig. 2 shows an inside and sectional view of this wheel, illustrating the disposition of the steering knuckle.

Hindley Worm-Gear Truck Axle

Fig. 1 shows a type of Hindley worm-gear that is supplied by the Otis Elevator Co., of Philadelphia, to the Commercial Truck Co., of that city. The worm is of special alloy high-carbon steel, and the wheel of Cramp's No. 5 gear bronze. The gear of this axle is 9¾ to 1, the worm is 8 8/10 inches in diameter, with four threads, of 1-inch pitch, meshing with 39 teeth on the wheel, whose pitch diameter is 11 9/10 inches in diameter. The differential gear is mounted within the gear wheel at its center. The worm thrust is taken by double ball thrust bearings, and both worm and wheel are mounted on annular ball bearings. The casing is a special crucible steel casting of one piece, the worm being supported by a removable cover, which permits the inspection or removal of the differential as a unit. It is claimed

Novelties for Motoring

that in the use of the Commercial Truck Co., these gears, of which 100 have been installed, have been given a mileage of 35,000 in four years, being in good condition still.

Ezeride Tire Filler

Southern motorists need no longer send their tires north to be filled, for the Ezeride Filler Co., New Orleans, La., offers a tire filler similar to the northern brands, which may be applied at the factory or any of its branches and agencies. Ezeride is a spongy, rubber-like substance which in spite of its close resemblance is said to contain no rubber. It is claimed to be immune to extremes of temperature, and is said to be proof against hardening or crumbling. It is said to be almost as easy-

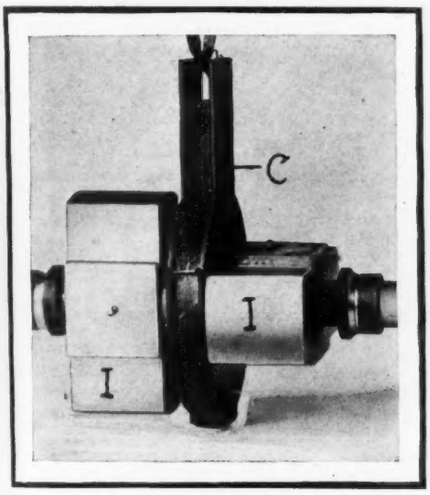


FIG. 4—NOVEL ARMATURE USED ON K-W MAGNETO

riding as air, and may be used repeatedly as the casings in which it is used are worn out. It is claimed to give greater life to tires than is possible when pneumatically inflated because of the impossibility of their ever being run flat, rim-cutting, or blowing out.

It is applied to the tire through the valve, being pumped into the tube, where it soon hardens, and may be used over and over again in new casings. This assures a perfect fit, and simplifies the first application. A novelty is the guarantee that is given. The filler is warranted to last 1 year without losing its shape, flattening, hardening, or in any way changing its consistency, on a basis of renewal, free of charge. It is sold at the usual prices for fillers of this character.

Jackson Air-Compressing Shock-Absorber

Utilizing the power usually lost in resisting shocks to compress air for tire inflation and air-starting, the Jackson combined air-compressor and shock-absorber has been patented by Joseph D. Jackson, Washington, Pa. It consists of a cylinder-and-piston compressor, geared to a ratchet and pawl action which is linked to a recoil arm. The recoil arm is secured to the axle and the air-compressor to the frame. In passing over severe road obstructions, the compressor is brought into play, storing the air compressed in a tank, the resistance of the compressor reducing the shock to the chassis.

Electric Lamp for Tourists

Open cars have been considered inconvenient by some in that at night the passengers must perforce be content with darkness after the shades of night have fallen. Tourists especially are handicapped by this limitation of the open car, so that night driving becomes an adventure rather than an outing. The Cleveland Electric Storage Battery Co., St. Louis, Mo., has produced a canopy top electric lamp to provide for this contingency. This lamp consists of a brass cylinder, to be screwed to one of the bows of the top, which contains a small incandescent bulb. A cylindrical shutter over the opening for light is provided to adjust the light to prevent dazzling the eyes of the driver. The light need not be removed from the top, but may be closed and folded up with it.

Monahan Piston-Valve Engine

Strongly reminiscent of steam-engine valves, the piston-valve illustrated in Fig. 5 presents several commendable features. The valve is known as the Monahan balanced piston valve, and is used on gas engines manufactured by the Termaat & Monahan Co., Oshkosh, Wis. Unlike rotary and sleeve-valves, this valve remains stationary during the explosion stroke. The action is positive and accurately timed, as with these types, but the linkage is quite as simple as that employed in poppet-valves. The shape of the combustion chamber may be made in the ideal dome form, the passage to the valve being small, and hence affording little space for foul gases to lurk. The piston is disposed in a valve-trunk cylinder, and has a very short stroke. It is placed at one side of the cylinder, and opens into it by means of a port. This port is slanted upwards toward the cylinder, so that the indrawn charge is forced upward to the top of the cylinder, in which the spark plug is situated.

The valve-passage is about the narrowed middle of the valve-piston. The inlet and exhaust ports are situated just above and below this passage, with the piston in middle position, as at the time of combustion. The piston is secured at its bottom to a valve rod, leading to the camshaft in the crankcase, as in usual practice. No springs are used, however, as the cam is in the form of an annularly slotted cylinder, which acts on a roller yoke. This motion is longitudinal and is transmitted to the vertical valve-rods by means of

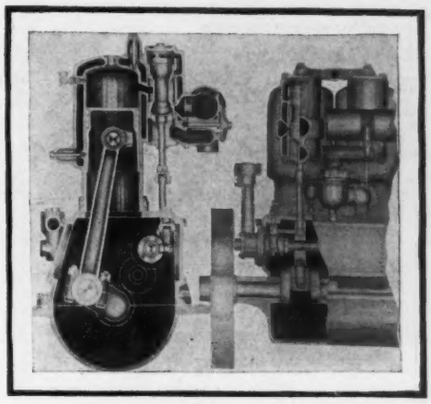


FIG. 5—MONAHAN PISTON-VALVE ENGINE

angle levers. The exhaust passage is at the bottom of the piston-valve stroke, while the inlet is at the top. The inlet is introduced to the valve trunk below the exhaust passage and is led through the hollow piston to the top of the valve cylinder, where it is conducted to the inlet port.

The positioning of the inlet and exhaust ports at opposite ends of the piston balances the action of this member, and therefore enables the actuating mechanism to be quite light and simple. The cams may be cut to give any valve timing, except as to coincidence of valve-openings, which is of course not possible with this arrangement. The engine is especially adapted to the use of low-grade fuels, as the fresh gases are thoroughly heated in passing through the piston to the inlet port. Both ends of the valve trunk may be opened for cleaning and inspection of the valve.

New Sewell Wheel

Improvements in the resilient element have been made in the Sewell cushion wheel, previously described in Motor Age. The new wheel, Fig. 6, differs from the former type, which is still continued for light trucks, in that the rubber tubes which formerly composed the resilient element, have been replaced for heavy service by the blocks as shown. These blocks are zig-zag in form. These wheels have given satisfactory service in use on heavy trucks, especially so in fire service, where the requirements are for resilient tire, that will permit of high speed, and yet a tire that can be relied upon.

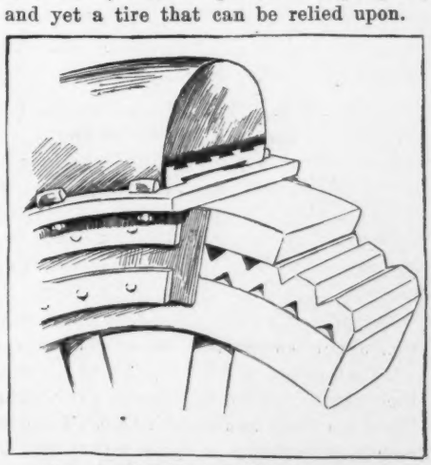


FIG. 6—SEWELL CUSHION WHEEL

Brief Business Announcements

Agencies Appointed by Motor Car and Truck Manufacturers

PLEASURE CARS

Town—	Agent	Car
Aledo, Ill.	E. B. Miller	Moon
Amityville, L. I.	A. R. Quick	Franklin
Audubon, Ia.	A. E. Beason	Rambler
Audubon, Ia.	John Martinson	Nyberg
Baltimore, Md.	Baltimore Garage Co	Cutting
Boston, Mass.	W. E. Kelton	Cutting
Buffalo, N. Y.	McFarlan-Buffalo Sales Co.	McFarlan
Canton, O.	Auto Service Co.	Moon
Canton, Ill.	Mead McClatchey	McFarlan
Charleston, Mo.	Luke Howlett	Moon
Cincinnati, O.	L. C. Denison	Abbott-Detroit
Clarksburg, W. Va.	Monticello Auto Co.	Cutting
Converse, Ind.	Corn & Sons Motor Co.	Cutting
Denver, Colo.	Havens Motor Car Co.	Cutting
Ft. Wayne, Ind.	Eureka Garage Co.	Cutting
Girard, Pa.	H. C. Duff Garage Co.	Cutting
Grant, Ia.	Grant Auto Co.	Firestone-Columbus
Greenville, N. C.	Greenville Motor Co.	Cutting
Hannibal, Mo.	Long Mfg. Co.	Moon
Indianapolis, Ind.	McFarlan Six Sales Co.	McFarlan
Indianapolis, Ind.	E. M. Holmes	Cutting
Jacksonville, Ill.	Roy W. Corbett	McFarlan
LaGrande, Ore.	Apperson Motor Car Co.	Franklin
Lexington, Ky.	O. R. Crutcher	McFarlan
Los Angeles, Cal.	Benton & Holmes	McFarlan
Madisonville, O.	W. G. Blaney	Franklin
Memphis, Tenn.	Cutting Car Co.	Cutting
Middleboro, Mass.	Middleboro Auto Exchange	McFarlan
Milwaukee, Wis.	W. E. Allen Co.	McFarlan
Minneapolis, Minn.	E. A. Zolle	Pathfinder
Minneapolis, Minn.	J. P. Snyder Co.	McFarlan
Minneapolis, Minn.	MacArthur-Thompson-Zollars Co.	Marathon
Moneta, Ia.	Louis Ruwe	Moon
New Orleans, La.	T. Sydney Weber Motor Car Co.	Page-Detroit
Orange City, Ia.	Aerrote Van Der Wilt	Moon
Petersburg, Va.	Wm. P. Atkinson Co.	Moon
Pittsburg, Pa.	Union Motor Car Co.	Cutting
Punxsutawney, Pa.	J. B. Beam & Son	McFarlan
Saskatoon, Can.	C. T. Clark	Franklin
Sidney, Neb.	McIntosh & Brewer	Franklin
Springfield, Ill.	Hunter Auto Service Station	McFarlan
St. Louis, Mo.	T. J. Moss Motor Car Co.	Borland
St. Louis, Mo.	Lindell Auto Sales Agency	Cutting
Syracuse, N. Y.	Overland-Syracuse Co.	Garford
Syracuse, N. Y.	Hanna Sales Co.	Cutting
Terre Haute, Ind.	S. P. Hall Garage Co.	Cutting
Toledo, O.	Gamble Motor Car Co.	Garford
Toronto, Can.	Automobile Sales Co., Ltd.	Moon
Wall Lake, Ia.	Hopkins & Herrig	Moon
Washington, D. C.	David S. Hendrick	Abbott-Detroit
Washington, D. C.	M. E. Pearson	Century
Wheeling, W. Va.	J. C. Stamp	Cutting
Yankton, S. D.	F. J. Nyberg	Moon
Youngstown, O.	R. P. Wells	McFarlan

TRUCKS

Joplin, Mo.	Joplin Supply Co.	Wilcox
Minneapolis, Minn.	Twin City Motor Co.	Mack
Minneapolis, Minn.	Twin City Motor Co.	Hewitt
Syracuse, N. Y.	Overland-Syracuse Co.	Garford
St. Joseph, Mo.	Farmer Auto Co.	Wilcox
Toledo, O.	Landmann-Griffith Motor Co.	Modern
Toledo, O.	Gamble Motor Car Co.	Garford

BROCKTON, Mass.—Charles Martin has purchased the Kelley garage, 389 Warren avenue.

Philadelphia, Pa.—R. Y. Spare has succeeded Robert J. Skilton as manager of the retail sales force of the Oldsmobile company.

Racine, Wis.—The Racine File Co. has doubled its capacity and changed its factory drive to electricity throughout. Much new equipment has been added. The company does a large business with motor car and parts manufacturers.

Mineral Point, Wis.—E. C. Fiedler is building a large garage adjoining the Masonic Temple at Mineral Point, to be occupied by his nephew, Harold Cummings. The building will be 84 by 47 feet in size. with two stories and basement. Mr. Cummings has not yet closed for agency lines.

Racine, Wis.—The Perfects Radiator Co., of Chicago, has moved to Racine and established a workshop at Fifteenth street and the Northwestern tracks. The production consists of motor car radiators, pumps and other cooling devices. Twenty hands are employed and the force will be increased as needed.

Columbus, O.—The Columbus Auto Parts Co., a new corporation recently chartered with a capital of $25,000, has taken over the patent rights and plant of the Columbus Auto Parts and Machine Co. The concern now occupies a large new plant at Russell and Fourth street, which contains 16,000 square feet of floor space. The company manufactures the Columbus windshield.

Brockton, Mass.—The Fisher-Nickerson Motor Car Co. has taken on the Little line for the territory.

Jefferson, Wis.—William Schwartzburg, of Milwaukee, has purchased the garage and agency business of Clarence Puerner at Jefferson.

Chicago—L. A. Bartlett, former sales manager of the Poss Motor Co., has become identified with the Universal Motor Truck Co. in the Chicago territory.

Detroit, Mich.—Carl J. Secoir, purchasing agent of the Havers Motor Car Co., Port Huron, Mich., has joined the forces of the Studebaker Corporation, Detroit.

Greenville, Ill.—The Auto Supply and Sales Co. has succeeded Ed De Moulin. Mr. De Moulin continues as president, with E. W. Miller as secretary-treasurer.

Minneapolis, Minn.—T. C. Connelly, Brookings, S. D., has been put in charge of the Minneapolis branch of the Brictson Mfg. Co., maker of Brictson treads. The company's branch will take care of the Twin Cities. It is at 49 Tenth street S.

Syracuse, N. Y.—The Baker Electric Sales Agency and public service station has located an agency in one-half of the C. A. Benjamin, Inc., garage in W. Onondaga street and will later move into larger quarters. Within a short time there is planned the erection of a large garage and public service station, especially for the accommodation of electric, commercial and pleasure cars.

Minneapolis, Minn.—The Moline Automobile Co. opened its new quarters at 1401 Hennepin avenue.

Baltimore, Md.—Showrooms have been opened at Mt. Royal avenue and Dolphin street by George G. Norwood, agent here for the Velie car.

Springfield, Mass.—The Westfield Motor Truck Co. has filed a petition in bankruptcy with liabilities of $20,616.67 and about $4,000 of assets.

Washington, D. C.—F. W. Robartes has been appointed manager of the local branch of the Locomobile Co. of America, succeeding James J. Flynn, who resigned a few days ago.

Boston, Mass.—Warren T. Walker, formerly with the Locomobile and Matheson branches in Boston, has been appointed manager of the Boston branch of the Kelly-Springfield tire company, succeeding Manager Beach, who has been sent to take charge of the San Francisco branch.

Detroit, Mich.—Smalley Daniels, who has specialized on metal tool boxes among other motor equipment, has become financially interested in a new box factory at Cleveland, O., recently built for this purpose by G. F. Mitchell & Son. Daniels will act as sales manager. The concern will also produce a line of other metal motor supplies, including funnels, meas-

ures, mufflers and drip pans, in addition to a general line of shop boxes, barrels, etc.

Racine, Wis.—The Belle City Brass and Iron Co., of Racine, has commenced work on a large addition.

Washington, D. C.—The Goodrich and Diamond tire depots now located at 1319 Fourteenth street, N. W., will be removed to 1502 Fourteenth street, about December 1.

Providence, R. I.—The Goodwin-Sherman Co., agent for the Studebaker line in Providence, R. I., will move into its new building on Washington street in a few days.

Philadelphia, Pa.—The premises at 206 North Broad street have been renovated and are now occupied by the Eastern Auto Co. Morris Freedman has been appointed manager.

San Francisco, Cal.—Barry Cool, of Los Angeles, Cal., has been appointed manager of the northern branch of the Pathfinder Motor Car Co., with headquarters at San Francisco.

Columbus, O.—The I. J. Cooper Rubber and Tire Co., recently organized, announces the opening of a new tire store at 263 North Fourth street. The company will handle a full line of tires and accessories, including the Racine line, the I. J. Cooper line of solid tires and the Dayton brand of vehicle tires. I. J. Cooper is president of the company.

St. Louis, Mo.—The St. Louis Motor Truck Co. has increased its capital stock from $17,500 to $22,500 for enlarging its mechanical equipment.

Springfield, Mass.—R. A. McKee, who handles the Lozier, Winton and Stutz in Springfield, Mass., has taken on the Mitchell to complete his line.

Kaukauna, Wis.—Peter Versteger has purchased the Hoehne Auto Co. and will conduct the business under the name of the Kaukauna Motor Car Co.

Dayton, O.—P. W. Klinger, who has served the Speedwell Motor Car Co. for some time in the capacity of factory manager, has recently assumed the title of chief engineer.

Providence, R. I.—W. B. Hollander has opened a salesroom and service station at 170 Fountain street for the Metz cars which he is handling there in addition to the Attleboro.

Philadelphia, Pa.—The M. S. H. Sales and Rubber Co. has been incorporated, to deal in tires and mechanical rubber goods, the local salesrooms being located at 660 North Broad street. The officers of the new company are Frank A. Harrigan, president; J. V. Harrigan, vice-president and general manager, and Robert J. Skilton, secretary and treasurer.

St. Louis, Mo.—The Oldsmobile Co. of Missouri now is located in its new quarters at 3205-7 Locust street.

Tacoma, Wash.—The Stutz Motor Car Co. has opened a Tacoma branch at 223 South K street. C. H. Moors is manager.

Bridgewater, Mass.—H. C. White, of South Main street, Bridgewater, Mass., has embarked in the motor business, having taken on the agency for the Overland for this section.

Minneapolis, Minn.—H. J. Mich & Co. have extended their territory for the Franklin to the entire state of Minnesota. The company heretofore had Hennepin county and adjoining counties.

Lowell, Mass.—The Lowell Automobile Corporation, that has handled the Buick at Lowell, Mass., for some years, has taken on the Oakland and the Little cars and will probably add the Chevrolet.

Lafayette, Ind.—The Hoffman-Moore Auto Co. of Lafayette, Ind., is branching out by opening a second salesroom in Danville, Ill., where it will distribute the Ford car. Archa Hoffman, president of the company, will move to Danville and will have charge of the new branch. Samuel C. Moore, secretary and treasurer, will remain at Lafayette.

Recent Incorporations

Albany, N. Y.—Boulevard Chauffeurs' Association; incorporators, Joseph Freedman, J. H. Levy, S. Spiro, M. Barnett, P. Pollner.

Amsterdam, N. Y.—John E. Larrabee Co., capital stock $100,000; to deal in motor cars; incorporators, L. L. Larrabee, W. W. Leavenworth, K. L. Larrabee.

Asbury Park, N. J.—Cress Automobile Co., capital stock $250,000; to do general motor car business; incorporators, L. F. Grice, H. A. White, F. Frank Appleby.

Barnesville, Minn.—Broadway Garage Co., capital stock $25,000; incorporators, E. Leonhardt, G. J. Dahm, G. W. Seefeldt, J. H. Fisch, J. A. Cramer, J. H. Boltz.

Boston, Mass.—Stutz Motor Car Co., capital stock $10,000; directors, J. P. H. Chandler, E. J. Bartlett, D. B. Jefferson.

Buffalo, N. Y.—Empire Radiator Co., capital stock $1,000,000; to manufacture radiators; incorporators, E. B. Green, W. S. Wicks, C. J. Ellis.

Buffalo, N. Y.—Buffalo & Interurban Motor Delivery Co., capital stock $125,000; incorporators, J. G. Berner, W. B. Grandson, C. T. Horton.

Camden, N. J.—Starr Automobile Co., capital stock $50,000; incorporators, F. L. Starr, H. H. Grace, T. P. Curley.

Colonial Beach, Va.—Colonial Beach Motor Co., capital stock $5,000; president, F. W. Alexander.

Chicago—Lakeside Motor Truck Transportation Co., capital stock $25,000; general trucking and passenger business; incorporators, B. B. Dunlap, J. M. Dunlap, E. W. Macavoy.

Chicago—Edgar Motor Delivery, capital stock $10,000; to manufacture and deal in motor cars, machinery, etc.; incorporators, J. Edgar, E. A. Zimmerman, A. L. Myers.

Chicago—Mollitar Tire Co., capital stock $100,000; to manufacture and deal in tires; incorporators, B. S. Lippincott, B. D. Towne, W. J. Higgins.

Chagrin Falls, O.—Falls Garage Co., capital stock $10,000; to manufacture and deal in motor cars; incorporators, O. S. Gore, T. O. Waits, H. D. Bishop, T. H. Huggett, A. E. Huggett.

Chicago—Chicago Garage Owners' Association; to promote business interests; incorporators, W. L. Rudd, E. A. Wise, H. Salvat, B. F. Campbell and others.

Charleston, W. Va.—Northway Motor Co., capital stock $600,000; incorporators, R. E. Northing, W. Pabodie, W. Trustee, E. E. Deckebach, F. B. Enslow.

Chicago—Buckeye Tire & Repair Co., capital stock $2,500; to lease and repair motor cars; incorporators, A. S. Sinheimer, H. I. Thompson, M. Guthman.

Chicago—Gumprice Motor Truck Co., capital stock $1,000,000; to manufacture motor cars and supplies; incorporators, H. E. Rice, Jr., W. C. Haight, P. Corkell.

Danbury, Conn.—Fillow Auto Co., capital stock $30,000; incorporators, A. H. Fillow, J. W. Juengst, B. M. Fillow.

Des Moines, Ia.—Union Motor Co., capital stock $10,000; incorporators, E. G. Plummer, P. Offill, W. H. Wilkins.

Detroit, Mich.—Gearless Differential Co., capital stock $20,000; incorporators, G. D. Bailey, W. F. Trudeaul, F. Howarth.

Elgin, Ill.—Elgin Motor Co., capital stock $20,000; to manufacture motors; incorporators, E. J. O'Beirne, E. J. Adamek, Charles Adamek.

Evanston, Ill.—Penn Oil Co., capital stock $2,500; to deal in lubricants; incorporators, J. M. Maddle, L. Ladole, L. N. Davis.

Gloucester, Mass.—Twin Light Garage Co., capital stock $10,000; incorporators, J. F. Perkins, F. A. Corliss.

Grand Rapids, Mich.—Peninsular Tire & Rubber Co., capital stock $1,000; incorporators, W. O. Hughart, Jr., G. T. Kendal, H. B. Gillett, T. P. Bradfield.

Greensboro, N. C.—Reitzel Auto Service Co., capital stock $25,000; incorporators, J. H. Reitzel, O. C. Klingman, L. G. Klingman.

Mansfield, O.—Brucker Motor Car Co., capital stock $500; incorporators, J. M. Ottinger and others.

Natchitoches, La.—Natchitoches Livery & Garage Co., capital stock $10,000; incorporators, M. Aaron, J. B. Presburg.

Newark, N. J.—Touraine Motors Co., capital stock $37,500; general motor car business; incorporators, C. E. Van Vlieck, Jr., E. M. Dailey, F. W. Kolk.

New York—Swetland Operating Co., capital stock $18,000; incorporators, E. C. O. Thomas, J. Kahn, R. C. Thompson.

New York—Bradhurst Garage Co., capital $5,000; incorporators, G. Glyn, J. C. Jackson, P. R. Gordon.

New York—Motor Hauling Corp., capital stock $5,000; incorporators, W. G. McGrath, M. B. Sentner, S. B. Kerr.

New York—Kells Motor Radiator Co., capital stock $650,000; to manufacture and deal in radiators and motors; incorporators, H. R. Bingham, A. F. Garbe, C. A. Cole.

New York—Flex-O-Fill Core Co., capital stock $50,000; to manufacture tire filler; incorporators, G. Osborn, L. McCready, M. A. Hoble.

New York—Gilbert-Fulton Corp., capital stock $1,000; incorporators, G. J. Gilbert, O. Gilbert, D. J. Fulton.

New York—Kells Motor Radiator Corp., capital stock $650,000; to manufacture radiators; incorporators, H. A. Bingham, A. F. Garbe, C. A. Cole.

New York—Universal Auto Appliance & Construction Co., capital stock $5,000; to manufacture motors; incorporators, F. W. Darnsteaedt, M. J. Leclerc, H. B. Tucker.

New York—Elmhurst Garage Co., capital stock $5,000; incorporators, T. G. Smith, P. J. Testan, M. Testan.

New York—American Commer Truck Co., capital stock $10,000; to manufacture and sell motor cars; incorporators, R. C. Thompson, J. Kahn, E. C. O. Thomas.

New York—Rector Engine Corp., capital stock $150,000; to manufacture motors; incorporators, E. Gore, W. Magowan, S. C. Yeaton.

Niagara Falls, N. Y.—Niagara Motor Car Corp., capital stock $10,000; incorporators, C. E. Cromley, D. M. Hepburn, L. S. Hepburn.

Pittsburgh, Pa.—Hollis Motor Vehicle Co., capital stock $20,000; incorporators, H. F. Wigman, J. P. Caufield, J. R. Krommer, O. A. Hollis, H. F. Wigman, W. McClurg Donley, A. Knabb.

Rockford, Ill.—Schlig Auto Repair Co., capital stock $5,000; incorporators, John H. White, John Schlig, D. White.

Richwood, O.—Scharf Gearless Motor Car Co., capital stock $5,000; to manufacture and deal in motor cars; incorporators, G. W. Wordon, J. A. Scharf, W. H. Siples, H. E. Payne, L. J. McCoy.

Saginaw, Mich.—Garber Buick Co., capital stock $10,000; to conduct a garage business; incorporators, G. S. Garber, E. L. Blake.

Salt Lake City, Utah—Automobile Speedway Co. of Salt Lake, capital stock $100,000; incorporators, O. H. Hewlett, D. C. McIntyre, F. Stauffer, D. W. Adamson.

St. Louis, Mo.—Federal Truck Co., capital stock $10,000; incorporators, A. Baker, M. B. Johnson, C. F. Prescott.

Taunton, Mass.—S. & M. Co., capital stock $5,000; conduct a garage; incorporators, C. H. Morse, F. A. Shaw, R. Morse.

Toledo, O.—Willys-Overland Co., capital stock $25,000,000; to deal in motor cars and conveyances; incorporators, W. Stewart, I. Kinsey, R. R. Scott.

Wilmington, Del.—Ajax Grieb Rubber Co., capital stock $5,000.

The Motorist's Kindergarten

EDITOR'S NOTE—Motor Age is publishing in this department a series of non-technical explanations of the various parts of motor cars for the benefit of the reader who knows nothing about them. The subjects will be dealt with in the most elementary manner, so that the series when completed will form a simple elucidation of the car.. The first article appeared October 10, 1912.

MANY times in the foregoing articles of this series we have referred to the explosive mixture of gasoline and air which is introduced into the cylinder through the intake valve and which by its burning produces the pressure which drives the piston down. So far, however, nothing has been said as to how this mixture is produced. Gasoline alone will not burn; it requires a certain amount of oxygen mixed with it. The easiest way to supply oxygen to the gasoline is to let it take the oxygen from the air, and each part of gasoline takes ten parts of air to burn it completely.

The air and gasoline are mixed before going through the inlet valve in a device called the carbureter, and the process is called carburetion. It gets this name because the process is that of carbureting the air; that is, mixing with the air, hydrocarbons, as gasoline, kerosene and the other petroleum products are called. The carbureter has two functions to perform, first to break up the liquid gasoline into either a very fine mist of liquid particles or a gas, and to mix this gas or spray with the air in the proper proportions.

The first carbureters were simply a chamber containing cotton wicks which soaked up the gasoline and then gave it off to the air which was drawn through the wicks. These wick carbureters were found to be too slow in action for the modern high-speed engines, so now the gasoline is sprayed into the air as it is drawn into the cylinder. This spray comes through a nozzle called the spray nozzle, but it does not spray all the time; otherwise the gasoline would be running out when the engine was not running. The top of the liquid is kept just below the top of the nozzle so that when the air is drawn past the nozzle the suction of the air draws the gasoline out of the nozzle

Carbureter Action

into the air rushing past mixing with the latter just above the nozzle in the mixing chamber and being carried into the cylinder.

The simplest arrangement of this kind is that illustrated at A, Fig. 11. This shows the air inlet at the bottom of the intake pipe which connects with the inlet port and valve. When the inlet valve is open, and the piston moving downward on its suction stroke, the suction of the piston draws air into the cylinder through the air inlet at the bottom of the intake pipe. In the path of the air is the spray nozzle, so that the gasoline is drawn out of the nozzle and carried with the air through the open inlet valve into the combustion space.

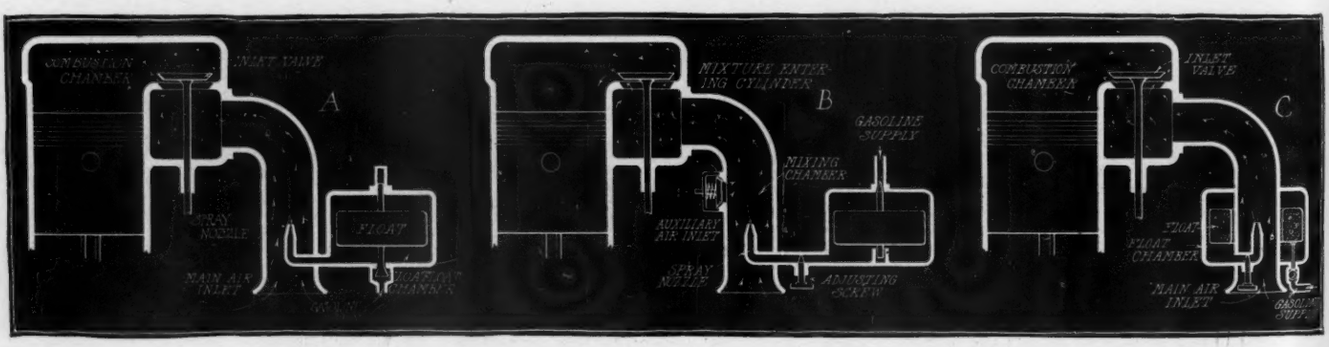
In order to be sure of having the level of the gasoline at the right height in the spray nozzle, this is arranged to be accomplished automatically by a float, in just the same way water is kept at the proper level in house tanks. An air-tight hollow metal float or a cork float is connected with a valve located in the feed line from the fuel tank, called the gasoline inlet. The float rides at a certain height in the gasoline in a chamber called the float chamber. The float and valve in the gasoline inlet, called the float valve, are so connected that when the float lowers with the lowering of the gasoline level in the float chamber, the float valve opens and admits more gasoline to the float chamber; and when the level has reached the required height, lifting the float with it, the valve closes.

If the gasoline inlet is at the bottom of the float chamber as in A, Fig. 11, the float valve can be a very simple one, simply a beveled head on the bottom of a stem which passes through the middle of the float and through the base of the float chamber. The under side of the hole in the base of the float chamber is beveled to form a seat for the float valve. It will be seen that as the float lowers with the lowering of the gasoline level in the float chamber, the valve moves downward away from its seat, opening the gasoline inlet and allowing more gasoline to enter until the float rises enough to bring the valve to its seat, thus closing it.

Sometimes the gasoline inlet is located at the top of the float chamber. In this case the float valve is just as simple, being located on the upper end of the rod through the float and seating against the underside of the top of the float chamber. In all cases there is a direct connection between the float chamber and the spray nozzle, so that the level in the two is always the same. As the gasoline is sucked out of the spray nozzle, lowering its level, the level in the float chamber lowers at the same time. This causes the float valve to open, gasoline flows from the tank into the float chamber and from there into the nozzle until the level of both is at the correct height, when the valve closes.

When the engine is running slowly, the air is not sucked past the spray nozzle as rapidly as it is when the engine is running at high speed. This lower speed of the air past the nozzle sucks less gasoline out of it at low engine speeds, in fact the proportion of the gasoline sucked out of the nozzle to the air taken past it into the engine is much greater at high speeds than it is at low speeds. So if we have the carbureter arranged to give the correct proportions of air and gasoline at low engine speeds, we will have too much gasoline in the mixture at high engine speeds.

(To be continued)



HOW AIR AND GASOLINE ARE MIXED IN CARBURETER AND DRAWN INTO CYLINDER. A—SIMPLEST CARBURETER; B—CARBURETER WITH AUXILIARY AIR VALVE; C—RING-SHAPE FLOAT